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THE NEW SYDENHAM SOCIETY.

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VOLUME L.

A

BIENNIAL RETROSPECT

OF

MEDICINE, SURGERY,

AND THEIR

ALLIED SCIENCES,

FOR

1869-70.

EDITED BY

MR. H. POWER, DR. SHEPHERD, MR. WAREN TAY,
MR. R. B. CARTER, DR. BARNES,
AND
DR. T. STEVENSON,

FOR

THE NEW SYDENHAM SOCIETY.

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REPORT

ON THE

PROGRESS OF PHYSIOLOGY AND THE ALLIED SCIENCES,

DURING THE YEARS 1869 AND 1870.

BY

HENRY POWER, F.R.C.S., M.B. Lond.,

EXAMINER IN PHYSIOLOGY AND COMPARATIVE ANATOMY IN THE UNIVERSITY OF LONDON; SENIOR OPHTHALMIC SURGEON TO ST. BARTHOLOMEW'S HOSPITAL.

The interesting reports of Dr. Carpenter* on the dredging operations undertaken by him, Proff. Wyville Thompson, Gwyn Jeffreys, and others, in H.M. surveying vessels "Porcupine" and "Lightning," and those of Prof. Agassiz, in deep sea-water, claim the first place in any account of the advance of biological science during the past two years, as from them not only has much information been obtained in respect to the temperature of the ocean at different depths and over different areas, but the existence of a very large and previously unsuspected variety of animal life has been conclusively established, the greater number of forms, indeed, being of a low type, but mingled also with others of much higher organization. The sea bottom of extensive regions in the North Atlantic Ocean has been shown by these investigations to consist of a stratum of calcareous mud, technically called "ooze," partly composed of living and dead Globigerinæ and partly of bodies termed Coccoliths and Coccospheres.

Besides these, various Corals, Echinodermata, Crustacea, Conchifera, and Gasteropods were brought up; and it is a matter of extreme interest to notice that many of the species obtained are new to science, and that several were supposed to be extinct as tertiary fossils. The existence of well-developed eyes, as well as the brilliant coloration of many of the species, seem to prove that light is not so entirely absent as has been commonly assumed, even at depths of 14,000 feet, or nearly three miles. In Dr. Carpenter's cruise around the Faröe Islands the temperature of the surface was everywhere nearly the same (about 52° Fahr.), whilst the lowest temperature of the bottom was 29·6° Fahr., the intermediate mass presenting variations of temperature not in all

* 'Proceed. Roy. Society,' 1869-70; 'Proceed. Roy. Instit.;' 'Nature,' vol. i; 'The Student,' vol. iii; and elsewhere.

cases capable of ready explanation. The higher the degree of temperature at the bottom the richer and more varied appeared to be the development of animal life, and to a corresponding degree did the nature of the deposits at the sea bottom and the organic remains they presented vary, so that in point of fact two deposits, containing very different forms of organic remains, may be occurring coincidently in the same waters—a circumstance of no slight importance in a geological point of view.

But if researches like these furnish information of the existence of an extensive and, till recently, unknown wealth of animal life in the abysses of the ocean, Prof. Tyndall, in a lecture on dust and haze, delivered at the Royal Institution,* has shown that particles which are undoubtedly organic, and may possibly prove to be the germs of low types of animals and vegetables, are not less abundantly distributed through the air—a discovery that must obviously have an important bearing on the subject of spontaneous generation, which has recently, from the experiments of Dr. Charlton Bastian and the address of Prof. Huxley to the British Association at Liverpool, attracted so much attention. That the particles floating in all air that has not long been at perfect rest are really organic is shown by the fact that they are destroyed by heat, as is evidenced by transmitting an electric beam through a tube before and after it has been exposed to the flame of a spirit lamp. In the former case the track of the beam is marked by the reflection from the surfaces of these particles, whilst in the latter the track is undiscernible in consequence of their destruction. Dr. Tyndall points out the fallacy that underlies at least one of M. Pouchet's experiments, from his neglecting the precaution to ascertain that his vessels were optically empty, whilst, on the other hand, he shows that the non-development of organisms in some of M. Pasteur's experiments, under otherwise favorable circumstances, was probably due to the quiescence of the air in which his flasks were placed, and the consequent subsidence of all such floating organic matter. Certainly, no future experiments on this subject will be regarded as satisfactory unless careful provision has been made against this source of error.

A remarkable series of papers, containing an account of a large number of experiments on the heterogeneous evolution of living things, has been published by Dr. C. Bastian,† in which, by repeating and modifying the well-known experiments of Pasteur and Pouchet, he finally sides with the latter, maintaining that there is strong *à priori* probability in favour of the possibility of the occurrence of such heterogeneous evolution. He states that he obtained various low forms of life, as bacteria, torula cells, spiral fibres, and fungi, not only from infusions of organic substances, as turnips, hay, &c., but from solutions of such inorganic salts as tartrate and phosphate of ammonia and soda, &c., with or without sugar, in distilled water, after they had been exposed to a boiling temperature, and hermetically sealed whilst in a state of ebullition. Prof. Huxley, in his able address, and in his somewhat sharp criticism on Dr. Bastian's experiments ('Nature,' ii) strenuously contends for the opposite doctrine of biogenesis, viz. that all living matter springs from pre-existing

* 'Proceed. Roy. Instit.,' vi, 1870, p. 1; 'Nature,' i, 1870, pp. 339 and 449.
† 'Nature,' ii, pp. 170, 193, 219.

living matter. Of biogenesis, as opposed to abiogenesis or spontaneous evolution, there are, as he points out, two modes, viz. homogenesis, in which the living parent gives rise to offspring which passes through the same cycle of changes as itself, and heterogenesis or, more properly speaking, xenogenesis, in which the offspring is altogether and permanently unlike the parent. The number of apparent instances of the latter, however, is, with the progress of exact observation, daily diminishing. The utmost that Prof. Huxley will admit is contained in the two following quotations:—"With organic chemistry, molecular physics and physiology yet in their infancy, and every day making prodigious strides, I think it would be the height of presumption for any man to say that the conditions under which matter assumes the properties we call 'vital' may not some day be artificially brought together. All I feel justified in affirming is, that I see no reason for believing that the feat has been performed yet." And again, referring to the difficulty of the conception of the first occurrence of life on this earth, he remarks that, "if it were given me to look beyond the abyss of geologically recorded time to the still more remote period when the earth was passing through physical and chemical conditions, which it can no more see again than a man can recall his infancy, I should expect to be a witness of the evolution of living protoplasm from non-living matter. I should expect to see it appear under forms of great simplicity, endowed like existing fungi with the power of determining the formation of new protoplasm from such matters as ammonium carbonates, oxalates and tartrates, and earthy phosphates and water, without the aid of life." From these opposed and contending views it is clear that no positive conclusions can be drawn in respect to the possibility of the immediate development of living beings from inorganic substances without the aid of pre-existing organisms; but it may be remarked, as an additional argument against it, that considering the wonderful variety of constitution characterising animal and vegetable organism, it would seem in the highest degree improbable the combination of the elements—carbon, hydrogen, oxygen, and nitrogen—should, under the various conditions under which the experiments are made, always result in the formation of the same types, as bacteria and vibrios. In the case of crystalline formation we have the same chemical compounds assuming definite and always identical forms, but here the result is nearly the same, whatever may be the nature and composition of the infusion employed.

Other papers relating to spontaneous generation are—Edward Parfitt ('Monthly Microscopic Journal,' 1869, ii, p. 253); C. Staniland Wake (idem, p. 306); Metcalfe Johnson, "Jottings of a Student of Heterogeny" (idem, 1870, iii, p. 25); Benj. Lowne (idem, 1870, iv, p. 326); Lionel Beale, 'On Protoplasm, or Life, Force, and Matter;' Dr. Victor Meunier, "On two new Species of Aspergillus,' Aug. 21, 1869; Engelmann, 'On the Periodical Evolution of Gas in the Protoplasm of Living Arcellæ.'*

Some interesting observations touching the influence of the occur-

* 'Nederlandsch Archief,' iv, 1868; abstract by Dr. Moore in 'Journal of Anatomy,' iv, p. 191, 1870.

rence of mimicry on the acceptance of Mr. Darwin's theory of natural selection, by A. W. Bennett, will be found in 'Nature,' ii, 1870.

BLOOD. CIRCULATION.

R. Gscheidlen* has endeavoured to improve and render more accurate Welcker's method of determining the quantity of blood in the body, first by saturating it with carbonic oxide, and thus rendering the colour of the arterial and venous blood identical; secondly, by injecting the blood-vessels with a one half per cent. solution of common salt instead of with water, to avoid solution of the corpuscles and diffusion of the hæmoglobin into the tissue; and thirdly, by estimating the colouring power of the muscular tissue separately. The mean of eight experiments on rabbits gave the proportion of blood to body weight as 1 : 20·1, and of five experiments on guinea-pigs as 1 : 20·9. In the former, the relation of the colouring matter of the muscle to that of the blood varied from 1 : 25 to 1 : 23·5, and in the latter as 1 : 11·3 to 1 : 26·2. Other experiments were undertaken to show the distribution of the blood in the different regions and cavities of the body. This was found to vary considerably with the conditions causing death. One experiment gave 22 per cent. of the whole blood in the thorax, 33·6 in the abdomen, and 44·4 in the remaining parts of the body; another, 15·5 in the thorax, 20·5 in the abdomen, and 64 elsewhere. The influence of various poisons on the distribution of the blood was also investigated. In relation to this point Beneke† gives measurements showing that the capacity of the arterial system varies wonderfully in different persons, allowance being made for height, the aorta, for example, varying from 54 mm. to 32 mm.

G. Jüdell‡ gives the following percentage proportions of the organic constituents of human blood *inter se* as obtained by two analyses:

	I.	II.
Hæmoglobin	86·79	94·30
Albuminous compounds . .	12·24	5·10
Lecithin	0·72	0·35
Cholesterine	0·25	0·25

The albuminous constituents of the *serum* of the blood have been carefully investigated by Prof. Heynsius (see original article, and Gamgee's Report),§ who shows that globulin (paraglobulin), and albuminate of potash are identical; and further, that the albuminous substance of the stroma of the blood corpuscles contributes to the formation of fibrin.

A. Schmidt‖ contends that the blood-corpuscles must also, like the serum, contain carbonic acid; the proportion, however, appears to be small. The composition of the gases flowing through irritable muscle

* 'Untersuch. aus d. Physiol. Labor. in Würzburg,' iii, p. 141.
† 'Sitzungsber d. Marburg. Naturwiss. Ges.,' 1868, Dec.
‡ 'Hoppe Seyler's Med. Chem. Untersuch.,' Heft iii, p. 386.
§ Humphry and Turner's 'Journal of Anatomy,' iii, 1869, p. 120; iv, p. 177; and v, p. 223.
‖ 'Virchow's Jahresber. für 1869,' p. 94.

has been carefully investigated by A. Schmidt at Leipsic under Ludwig's direction, and a full abstract of the paper is given by Dr. Gamgee in the 'Journal of Anatomy' (iv, p. 172, 1870). From these researches it appears that active muscle consumes more oxygen than quiescent, but no relation can be established between the amount of oxygen absorbed and of work done. The quantity of oxygen taken up by muscle increases proportionately to the rate of flow of blood through its vessels.

Preyer* gives a detailed account of the physical and chemical properties of the colouring matter of the blood, and shows the optical properties of this substance are absolutely the same throughout the whole range of the animal kingdom, so that from man down to the earthworm the blood colouring matter presents exactly the same absorption bands, and furnishes when decomposed substances having identical spectra. The crystals of hæmo-globin are all doubly refracting, have a silky lustre when seen suspended in water, possess an acid reaction, do not diffuse through parchment, and have not the slightest fibrino-plastic properties.

Salkowsky† refers to the question of the identity of hæmatoidin and bilirubin, and states that hæmatoidin obtained from a cyst possessed all the properties of bilirubin. Dr. P. A. Young‡ expresses himself still more strongly in favour of the same view, and shows from the results of his analysis, first, that bile is a secretion rich in iron; and secondly, that this iron is probably derived from hæmoglobin; hence he draws the conclusion that the destruction of the red corpuscles takes place in the adult liver. Hoppe Seyler § describes a new purple-red colouring matter obtained together with albumen from hæmoglobin by the action of alcohol and sulphuric acid, and of alcohol and an alkali. He names it hæmo-chromogen, and states that by oxidation it is converted into hæmatin.

Dr. Richardson,‖ of Pennsylvania Hospital, Philadelphia, adduces various arguments in favour of the old view that the blood-corpuscles possess a cellular structure (cell wall and contents). He relies chiefly on the remarkable appearances presented by the crystallization of the colouring matter of the corpuscle in the large red corpuscles of the proteus or menobranchus; upon the results of the section of the corpuscles with a sharp needle, and upon the effects of the addition of large quantities of water to the blood of man.

Savory¶ maintains that if the blood of the oviparous vertebrata be examined with sufficient rapidity after withdrawal from the vessels, the red corpuscles will be found to be destitute of a nucleus, which may, indeed, be seen to form in their interior, especially in strong and healthy animals. This statement receives some support from the observations of Brunton,** according to whom the composition of the nuclei of the blood-corpuscles of birds, amphibia, and fishes, is much more analogous

* 'Pflüger's Archiv für Physiol.,' 1868, p. 395; and full abstract by Gamgee in Humphry and Turner's 'Journal of Anat. and Physiol.,' iii, 1869, p. 465.

† 'Hoppe Seyler's Med. Chem. Untersuch,' Heft iii, p. 436.

‡ Humphry and Turner's 'Journal of Anat.,' v, p. 158.

§ 'Centralblatt,' 1870, p. 244. ‖ Pamphlet, 1870.

¶ 'Proceed. Roy. Soc.,' xvii, p. 346.

** Humphry and Turner's 'Journal of Anatomy and Physiol.,' iv, 1870, p 91.

to mucin than to the albuminous compounds. The formation of the nucleus may, therefore, be due to the mechanical separation of these two materials.

Dr. Norris* has written an interesting paper on the laws and principles concerned in the aggregation of blood-corpuscles both within and without the vessels, in which it is ingeniously shown that when discs of cork similar in shape to the blood-corpuscles are accurately poised in water, they have a tendency to run together by their flat surfaces, and thus to form rouleaux resembling those of coagulated blood. Various conditions interfere with or modify this tendency.

MM. Béchamp and Estor† from their experiments have arrived at the extraordinary conclusions that the globules of blood are aggregates of microzymas; that they can evolve into chaplets of grains, bacterias, bacteridia, &c.; that they behave like ferments, and that the microzymas of the corpuscles are able to generate cellules resembling those of the leucocytes or white corpuscles of the blood and other smaller cells more closely resembling globules.

Prof. Mantegazza‡ attributes the coagulation of the blood to the discharge of fibrino-plastin from the white corpuscles, which, combining with the fibrinogen of the plasma, produces fibrin. In support of this theory he insists on the complete coincidence of the power of coagulation with the presence of white blood- or lymph-corpuscles, and on the fibrino-plastic properties of tissues such as the cornea, which abound in cells similar to these corpuscles. Grünhagen finds that when blood is allowed to flow into from ten to twenty times its volume of glycerin with constant stirring no fibrin is formed.

Klein§ has observed the division of the white corpuscles of the blood in the triton, and which is still more important, in man, by maintaining the freshly drawn blood at a proper temperature (70°—80° F. for the triton, and 100° F. for man). Stricker and Norris‖ have also often seen the colourless corpuscles in the inflamed tongue of frogs become first fissured and then divided into two.

In reference to the escape of the white corpuscles from the capillaries Mr. Koster¶ supports the original statements of Addison and Cohnheim, and describes the colourless blood-cells as penetrating into and soon through the wall of the vessels when inflammation is established. Axel Key,** by throwing cinnabar into the blood, and exciting inflammation in the kidneys, arrives at the conclusion that the white corpuscles escape from the vessels even when very slight irritation is present, but that they by no means necessarily then form pus, and in these views Richardson†† fully coincides. Dr.

* 'Proceed. Roy. Soc.,' 1869, xvii, p. 429.
† 'Comptes Rendus,' 1869, pp. 408, 466, and 1870, i, p. 265.
‡ 'Ann. di Chim.,' July, 1869.
§ 'Centralblatt,' No. 2, 1870.
‖ 'Studien aus dem Institut für Experim. Pathol. zu Wien.'
¶ 'Nederlandsch Archief,' iii, 1868; and Humphry and Turner's 'Journal of Anat.,' 1869, p. 246.
** 'Med. Times and Gazette,' May, 1869.
†† 'American Journal of Medical Sciences,' 1870, p. 56.

G. Hayem,* working with Vulpian on the frog, corroborates Cohnheim's views in all essential facts, whilst Vulpian and Volkmann and Stradener† have shown that in erysipelatous inflammation occurring in man many white corpuscles are found collected around the vessels. Prof. Stricker‡ entertains no doubt whatever of the migration of large numbers of white corpuscles from the blood-vessels in inflammation, but considers that pus may be derived from other sources, as from epithelial cells, connective-tissue corpuscles, and the corpuscles of muscle. J. Woodward§ describes well-marked stomata as existing in veins of 1-50th inch in diameter, and as occasionally present in the capillaries and smaller arteries. Their size ranges from 1-4000th to 1-10000th of an inch, and through these he has witnessed the escape of the white corpuscles. On the other hand M. Feltz‖ denies the existence of stomata in the walls of the capillary vessels, and has been unable to observe the passage of the white corpuscles of the blood through the wall as described by Cohnheim and Recklinghausen. M. Picot¶ also believes Cohnheim's views to be founded on an error of observation, and that the leucocytes seen outside the walls of the capillaries are formed where they are found; he has been unable to find any stomata in the vessels. An argument in favour of Cohnheim's views may be adduced in the observations of Saviotti** and Tschaussow,†† the former of whom witnessed the absorption of pigment-cells into the blood-vessels of the frog's web after irritation, whilst the latter observed the escape of pigment-corpuscles from the vessels. Finally, a good article, by Dr. Caton, appears in Humphry and Turner's 'Journal of Anatomy' for Nov. 1870, on this subject, who states that he was unable to observe any cell-migration in winter frogs, but clearly followed it in the inflamed mesentery of strong and healthy spring animals, which perhaps in some measure reconciles the above discrepancy between different observers. In experiments made on the transparent parts of fishes, he never noticed any migration of cells, but in tadpoles the migration of both *red* and white cells was seen in the absence of local inflammation. Dr. Bastian‡‡ describes various organisms as being present in the blood in disease.

E. Neumann§§ gives fuller details respecting his view that the medulla of the bones constitutes a focus for the formation of red blood-corpuscles, all intermediate forms of cells between a lymph-corpuscle and a blood-corpuscle being readily visible in it.

Hoyer, in a communication upon the same subject,‖‖ remarks that the medulla of bones possesses a structure essentially similar to that of the

* 'Archives de Médecine,' Mars, 1870, p. 364.
† 'Archives de Médecine,' Mars, 1870, p. 364.
‡ 'Quart. Journ. of Microscop. Science,' 1870, p. 257.
§ 'Monthly Microscopic Journal,' Oct., 1870.
‖ 'Comptes Rendus,' 1870, i, p. 132, and p. 1228; and Robin's 'Journal de l'Anatomie,' Jan. 1870.
¶ Idem, p. 1367.
** 'Centralblatt,' Nos. 10 and 11, 1870.
†† Idem, No. 20.
‡‡ 'Pathol. Transact.,' xx, p. 425.
§§ 'Archiv. d. Heilkunde,' 1869, x, p. 68; 'C. Rendus,' 1869, p. 1112.
‖‖ 'Centralblatt,' 1869, Nos. 16 and 17.

spleen and hence considers that an explanation is afforded of the accumulation of colouring particles in it in injection experiments, and of white corpuscles showing all intermediate forms.

Bizzozero* furnishes evidence to show that, besides a blood-forming function, an active process of disintegration of blood-corpuscles takes place in the medulla of bones, large nucleated lymph-corpuscle-like bodies being found in it containing from two to thirty blood-corpuscles or pigment-granules in their interior.

Dr. Gamgee† makes the specific heat of blood to be 1·02°, which represents the mean of all his experiments on the blood of the ox. It differs therefore but little from that of water.

Dr. Blake‡ describes the action of the salts of iron and of the compounds of iodine, bromine, and chlorine, when introduced directly into the blood; the protosalts of the former metal diminishing the irritability of the heart, and ultimately arresting its movements, retarding the respiration, and producing death by their action on the nervous system. The action of the persalts of iron are ten times more energetic, and quickly arrest the pulmonary circulation, producing venous congestion and abolition of the functions of the encephalon. The most striking phenomena of the action of the metalloids is the contraction they produce of both the systemic and pulmonary blood-vessels, producing death by asphyxia, the heart long retaining its irritability.

Schönn§ describes the action of peroxide of hydrogen on the blood.

Dr. M'Quillen ‖ shows that chloroform and ether *vapour* have little or no action on the blood-corpuscles, whatever may be the direct action of these fluids upon them, and hence is inclined to believe that they ordinarily act directly on the nervous system.

HEART.

Dr. Hensley¶ shows the spiral arrangement of the muscular fibres of the ventricles of the heart to be specially adapted to effect the complete discharge of the blood from the cavity.

Dr. Herbert Davies** calls attention to the existence of a law regulating the relative magnitude of the areas of the four orifices of the heart. On converting Dr. Peacock's measurements of the circumference of the several orifices into numbers representing these areas, he finds that in the male the respective mean areas are: tricuspid $1\frac{3}{4}$ sq. inch.; pulmonic 1; mitral $1\frac{1}{4}$; aortic $\frac{3}{4}$; and on comparing the ratios of the areas of corresponding orifices—

$$\begin{matrix}\text{The area of tricuspid} \\ \text{,, mitral}\end{matrix} = \frac{1{\cdot}78}{1{\cdot}27} = 1{\cdot}4 \text{ nearly.}$$

$$\begin{matrix}\text{The area of pulmonic} \\ \text{,, aortic}\end{matrix} = \frac{1}{{\cdot}78} = 1{\cdot}3 \text{ nearly.}$$

* 'Gaz. Med. Ital. Lombard.,' 1869, No. 2.
† Humphry and Turner's 'Journal of Anatomy,' 1870, p. 139.
‡ 'Journal of Anatomy and Physiology,' iii, 1869, p. 24, iv, 1870, p. 1.
§ 'Centralblatt,' 1870, p. 340.
‖ 'Monthly Microscop. Journ.,' 1869, p. 354.
¶ 'Journal of Anatomy,' iv. p. 82.
** 'Proceed. Roy. Soc.,' No. 118, 1870.

Or in other words the area of the tricuspid appears from these calculations to bear nearly the same relation to the area of the mitral that the area of the pulmonic does to that of the aortic orifice. He shows from measurements that the orifices arranged in the order of their magnitude are as follows:—1. Tricuspid; 2. Mitral; 3. Pulmonic; 4. Aortic. He points out the importance of this law in enabling, when the dimensions of three of the openings are known, a calculation to be made of the proper area of the fourth, and hence to determine the degree of contraction or dilatation present in disease. He further maintains the following propositions: that in normally constructed and acting hearts the times of ventricular contraction and of ventricular dilatation are equal in duration on the two sides; that equal, or almost equal, volumes of blood are received in diastole, and are expelled in systole from the two sides, and that the ventricles are of equal or almost equal capacity. He then refers to the velocity of the blood in diastole through the tricuspid and mitral orifices, and shows that the former is to the latter as 5 : 7, whilst the velocity of the currents through the aortic and pulmonary orifices are as 4 : 3. The absolute velocity he gives as follows:—through tricuspid orifice, 5 inches per second; through pulmonic orifice, 17·3 inches per second; through mitral orifice, 7 inches per second; and through aortic orifice, 23·1 inches per second. Mr. Trotter,* in an able criticism on this paper, contests the correctness of the deductions drawn by Dr. Davies.

Dr. Haughton† endeavours to determine the mechanical work done by the human heart, and proceeds on the assumptions: 1. That the heart contracts seventy-five times in a minute. 2. That at each contraction the left ventricle of the heart discharges three ounces of blood; and 3. That the hæmastatic column in man stands at a height of 9·923 feet. He multiplies the quantity of blood discharged at each contraction by the height of the hæmastatic column ($3 \times 9{\cdot}923 = 29{\cdot}769$), and regards the product as indicating the number of ounces that are raised one foot by each contraction of the heart. He again multiplies the product by the number of contractions of the heart in twenty-hours, and so he obtains 89·706 foot tons as the measure of the daily work done by the left ventricle of the heart. Dr. Buchanan,‡ to whom I am indebted for the above resumé of Dr. Haughton's paper, avails himself of a fourth element, viz. the area of the ventricular orifice of the aorta, which he estimates with Kiel as equal to ·4187 of a square inch, and uses these data to determine the force of the heart as follows: he assumes that the heart beats seventy-two times in a minute; that it discharges two ounces of blood at each contraction, and that the height of the hæmastatic column in man is eighty-eight inches. Now the weight of a cylinder of blood eighty-eight inches in height, and having a basis of 0·4187 of a square inch, is twenty-two ounces. Further, two ounces of blood, the quantity discharged at each contraction, fill exactly of such a cylinder eight inches. Dr. Haughton's computation is 2×88, and that is exactly equivalent to Dr. Buchanan's 22×8; the common product being

* 'Journal of Anatomy,' iv, p. 295, 1870.
† 'Dublin Quart. Journ. of Med. Sci.,' xlix, p. 47.
‡ 'Lancet,' Nov. 12, 1870.

176, which denotes the number of ounces that are lifted one inch at each contraction, and by dividing 176 by 12, we obtain the number of ounces that are lifted one foot, viz., 14·66. This equals 65·9 foot pounds in a minute, or 42·3 foot tons in twenty-four hours.

Dr. Buchanan gives the following statement of his views:

A is the calculated hæmastatical column.
B is the observed „ „
C is the column equal in volume to the capacity of the left ventricle of the heart.

Weight in oz. avoird.	Volume, as height of column, in inches.
A = 22·301	89·165797
B = 22·	88·
C = 2·	8·

FORCE OF HEART.

1. Statical equivalent = A = 22· oz. + 129·28 grains.
2. Dynamical equivalent = B × C, the weight of the one into the volume of the other

$$\left.\begin{matrix} 22 \times 8\cdot \\ 2 \times 88\cdot \end{matrix}\right\} = 176 \text{ inch ounces} = 14\tfrac{2}{3} \text{ foot ounces.}$$

3. Momentum of blood as emitted from heart = weight B × vol. C = 22 oz. moved over a space of 8 inches at each pulsation, or with a velocity of 10 inches per second.

From some careful experiments made by O. Bayer,* the first sound or systolic bruit of the heart appears to be due partly to tension of the auriculo-ventricular valves, and partly to the contraction of the muscle.

Beale† finds in the septum of the auricles of the frog, ganglion-cells of oval or pyriform shape, that constantly give off a number of straight and spiral fibres, which, penetrating amongst the muscular fibres, probably return, after forming loops, into the same ganglion-cell.

C. Gussenbaur‡ describes muscular bundles in the mitral and tricuspid valves, extending to about the third part of their length, and proceeding from the musculature of the auricle.

Dr. Garrod§ contributes a short paper on the relative duration of the component parts of the radial sphygmograph trace in health.

An excellent description of the movements of the heart will be found in the Fullerian Lectures delivered at the Royal Institution in 1869, by Michael Foster, appearing in the 'Rev. des Cours Scient.' for 1870.

In regard to the blood-vessels, T. A. Carter‖ maintains that a communication may be observed between them and the lymphatics in almost all organs amongst amphibia and mammals in the form of a very delicate plexus. He attributes his success in, as he believes, establishing this fact to the use of transparent injection of extraordinary penetrating power, consisting of carmine precipitated in gelatine, from its ammoniacal solution by acetic acid. Prussian blue injection of a similar nature he finds to be a less reliable injecting material. He particularly

* 'Archiv. f. Heilkunde,' 1870, p. 157.
† 'Quart. Journ. of Microscop. Sci.,' April, 1869.
‡ 'Wien Akad. Sitzungs,' lvii, p. 1103.
§ 'Proceed. Roy. Soc.' xviii, p. 351.
‖ 'Journal of Anatomy and Physiol.,' iv, p. 97.

recommends young frogs for injection, and the examination of their palatal mucous membrane, which he describes as being covered by a layer of ciliated cells; then a *network* of granular cells uniting by means of their processes, which are usually three in number to each cell; and, finally, a layer of globular nucleated cells. The second of the above layers can be injected from the blood-vessels, and he is disposed to believe, as it is too fine to receive the blood-corpuscles, probably forms the commencement of the lymphatic system. He thinks a similar plexus is present in the skin of Batrachians, and analogous intermediary vessels between the capillaries and lymphatics of the liver, thyroid body, and other parts. Henle * considers no satisfactory evidence of such a communication has been established. Eberth † has found that the vessels of the central organs of the nervous system are covered by a layer of epithelium, to which he has applied the term "perithelium," and which can be brought into view by the application of nitrate of silver as a staining agent.

Golubew ‡ describes fully the process of development of the capillary vessels of the frog, which does not essentially differ from that given by older observers.

Hyett § states that the umbilical artery increases in size in a peripheric direction, and that the placentary arteries present bulb-like dilatations at their point of division.

Prof. Tomsa‖ describes non-medullated nerve-fibres passing to the capillaries of the papillæ of the skin, around which they form plexuses with nodal points that correspond to the well-known nuclei from which fine branches dip into the capillary wall. They may be rendered visible by the action of chloride of gold and short maceration in acetic acid of five per cent.

In regard to the regeneration of veins after the excision of a small portion of their length, M. Minkewitsch ¶ has shown that it never takes place, the collateral circulation being maintained by neighbouring venous channels, some of which attain so large a size, and are in such close contiguity to the original vessel, as easily to give rise to a misconception.

Franz Riegel, in an essay on the phenomena of the circulation in the smaller vessels,** describes the result of experiments made in Prof. Stricker's laboratory at Vienna. Section of the sciatic nerve in the middle of the thigh in frogs produced no alteration, either in size of the vessels or the rapidity of the current. Irritation of the centric extremity of the divided nerve caused acceleration of the current in ten minutes in the smaller arteries. As a general rule, contraction of the vessels and acceleration of the current proceed coincidently. No contraction was ever observed in the veins.

* 'Bericht für Anatomie und Physiologie,' 1869, p. 70.
† 'Virchow's Archiv,' xlix, p. 48.
‡ 'Archiv f. Mikroskop. Anat.,' v, p. 49.
§ 'Pamphlet, Wien,' 1869.
‖ 'Centralbatt,' 1869, p. 562.
¶ 'Virchow's Archiv,' xlviii, p. 409.
** 'Centralblatt,' No. 29, 1870.

Heppner* contends with Luschka, and against Arnold and Pförtner for the glandular nature of the glandula caroticum.

DIGESTION.

A series of experiments have been undertaken with complete success in the physiological laboratory of Wurzburg by F. Lösch,† to demonstrate the inaccuracy of the statement made by some observers that the action of saliva on starch is due to the presence of a fungus (Leptothrix buccalis) and not to ptyaline. It was remarkable, however, that the saliva obtained from the submaxillary gland of the dog by irritation of the chorda tympani exerted no action upon cooked starch, either when exposed to the air or when kept in hermetically sealed vessels, notwithstanding the temperature was steadily maintained at or a little above blood heat. Schiff‡ having found by experiment that the quantity of bile secreted diminishes when a biliary fistula has been established, and increases again when it is reinjected, draws the conclusion that the secretion is reabsorbed in its passage along the alimentary canal, and serves for the formation of fresh supplies; though it might fairly be objected that the bile in all probability plays an important part in the processes of intestinal digestion, however ignorant we may be of its nature, and that, consequently, its abstraction through a fistula may impair the digestion and absorption of the materials required for the production of the biliary secretion. He finds that the addition of bile to ordinary chyme only causes a precipitation of mucus; but if the chyme be *very* acid the peptones also fall, and thus the conflicting statements of previous observers are reconciled. The secretions of Brünner's glands and of the Lieberkühnian follicles appear to possess a remarkable power of arresting the digestive action of the gastric juice. After extirpation of the spleen the pancreatic secretion is no longer capable of digesting albumen.

Horsford§ considers that the free hydrochloric acid in the gastric juice proceeds from the action of acid phosphates on alkaline chlorides in the gastric tubules.

v. Wittich‖ has suggested a new mode by which the active principle of the salivary fluid, and not only of the salivary, but of the pancreatic and gastric fluids, may be obtained. He minces the salivary gland and washes it with water; the addition of glycerine will then extract the sugar forming ferment, which can be precipitated by means of absolute alcohol, with preservation of its power when redissolved in water. He obtains pepsine in the same way by acting on the finely divided stomach with glycerine.

Prof. M. Foster¶ states he has tried and can recommend v. Wittich's mode of isolating pepsine and other so-called ferments by means of pure glycerine. The amylo-lytic or starch-converting ferment ob-

* 'Virchow's Archiv,' xlvi, p. 401.

† Abstract, by Hermann, in 'Centralblatt fur die Med. Wiss.,' 1869, p. 231.

‡ 'Lo Sperimentale,' 1870; and Hermann's Abstract in the 'Centralblatt,' No. 19, 1870.

§ 'Proceed. Roy. Soc.,' No. iii.

‖ 'Pflüger's Archiv für die gesammte Physiologie,' ii, p. 193; and 'Berlin Klinische Wochenschrift,' 1869, No. 47.

¶ 'Nature,' Dec. 29, 1870.

tained in a similar manner from the salivary glands and pancreas is almost entirely free from proteids. A laden pancreas gave up a ferment capable of dissolving fibrin.

Weiske* demonstrates that cellulose is digestible, and that by using cooked vegetables the quantity that undergoes digestion is augmented.

Brücke† shows that the formation of the fatty acids from the fats by the agency of the pancreatic juice aids the absorption of the undecomposed fats. He also obtains from peptone two new substances, to which he has given the names of alkophyr and hydrophyr.

G. Albini and Renzone‡ regard the columnar cells of the intestine as ciliated but quiescent cells, covered with a protective horny investment. The cup-cells they found in the human fœtus in the proportion of one to five of the columnar cells, and usually closed, containing a granular nucleated cell. In the adult the proportion between the two is as 1 : 20; they are rare in the large intestine, and have for their function to promote the process of resorption. A. Schlemmer§ has examined the glands of Brunner, and finds that they are lined throughout by columnar epithelium.

Dr. Basch‖ describes cup-shaped nuclei in the columnar epithelium of the intestine of a frog, after maceration in a one per cent. solution of boracic acid, but does not suggest any explanation or probable result of their presence.

Dr. Paschutin¶ has conducted a series of researches on digestion in the laboratory of Prof. Setschenow, of St. Petersburgh, and has arrived at the following conclusions:

The juice of the small intestine, obtained from a loop in the manner suggested by M. Thiry, possesses no action on fats, and scarcely any upon fibrin of blood or other albuminous compounds. The infusion of the intestine of the dog, however, can convert starch into sugar; in this acting like, only more energetically than, infusions of other mucous membranes, as those of the trachea and urinary bladder, which also contain much of the diastatic ferment. Next in order to them in point of activity stand the mucous linings of the gall-bladder, then those of the cæcum and large intestine, and finally those of the rectum and stomach. The juice of the small intestine obtained by a fistula converted starch into sugar. No secretion could be obtained from a fistula of the large intestine. Of all mucous membranes that of the small intestine alone contains the ferment that is capable of converting cane into grape sugar; this is also contained in the secretion of the small intestine. It is remarkable, however, that this power is only possessed by the small intestines of certain animals, as the dog, pig, rat, mouse, rabbit, and others, whilst it is absent in the ruminants.

Those infusions that act both in converting starch into sugar (A) and cane sugar into grape (B) contain not one but two ferments (A and B),

* 'Centralblatt,' No. 26. 1870.
† 'Wien Akad. Sitzungsberichte,' lxi.
‡ 'Rendiconti della Acad. d. sc. fis. e. mat. di Napoli,' 1868.
§ 'Wien Akad. Sitzungsberichte,' lx.
‖ 'Centralblatt,' 1869, p. 321.
¶ 'Centralblatt,' No. 36, 1870.

which can be separated from one another by mechanical means, or by filtration through an animal membrane. The details of the methods to be pursued are given in the original paper. A temperature exceeding 104° Fahr. operates destructively on the animal ferment that converts starch into sugar, but temperatures between 68° and 104° do not check its action. The temperature at which human saliva, diluted with ten or twelve parts of water, acts most energetically on boiled starch is from 100° to 106° Fahr. Above or below these degrees the action is feebler. The temperature at which the action of the malt ferment on boiled starch is most active is 138° Fahr.

The movements of the intestines have been carefully studied by MM. Legros and Onimus,* who introduced a sound, to the extremity of which a caoutchouc ball was fastened, into the intestines through a fistulous orifice. Various stimuli were applied to the intestines. They found that under ordinary circumstances regular peristaltic (rarely anti-peristaltic) contractions take place with intervening periods of rest. Very rarely a part of the intestine contracts *per se*. The contractions of the upper part of the intestine succeed one another more quickly than those of the lower. The contractions of the large intestine differ in amount, duration, and force, from those of the small. The movements of the stomach are not so regular as those of the intestine, and differ in the cardiac and pyloric regions. Interruption of the arterial current increases the peristaltic movements, but interruption of the venous current is without effect. Induction currents of electricity cause contraction at the poles, but relaxation between them. Constant currents stop the peristaltic movements, and cause relaxation of the intestinal walls, providing they are passed in the direction of the normal movements, but contraction when in the opposite direction. Excitation of the central extremity of the cut vagus in the neck stops the intestinal movements, relaxing the walls of the intestines. Excitation of the distal extremity is inoperative. Iced water causes contraction, warm water or solution of common salt increases the movements, as do also croton oil and ipecacuanha and atropia in small doses. Morphia retards them. Strychnia causes contraction of the intestine coincidently with the general convulsions.

Voit† and Brücke‡ both call in question the statement now generally made that albuminous compounds must be altogether reduced to peptones before absorption, Voit finding that in the ligatured loops of intestines of dogs and cats, an acid-albuminate (acid juice of muscle) is absorbed with almost as much rapidity as peptone; and that even ser- and ov-albumen were, though more slowly, taken up, whilst Brücke observed coagulation on the application of heat take place in the chyle within the villi. Meissner, however,§ well observes that Brücke does not explain how, notwithstanding the variety of forms of albumen that are ingested, only one or two forms proper to the animal examined are found in the blood.

* 'Journal de l'Anatomie et de la Physiologie,' vi, p. 37 and 163.
† 'Voit and J. Bauer, 'Zeitschrift für Biologie,' v, p. 536.
‡ 'Wiener Sitzungsberichte,' lix, 1869.
§ 'Bericht über die Fortschritte der Physiologie im Jahre,' 1869.

Adolf Mayer* discusses the mode in which pepsin affects digestion. The physiology of the intestinal secretion is discussed by Alexis Dobroslawin, in Rollett's 'Untersuchungen aus dem Institut für Physiol. in Graz.'

G. Pflüger† has made a series of researches on the percentage proportion of the gases of the various secretions of the dog, with the following results:

	Saliva from submaxillary gland after meat diet.	Urine.	Milk.	Bile. Alkaline.	Bile. Neutral.
	Per cent.	Per cent.	Per ct.	Per cent.	Per cent.
Oxygen	0·6	0·07	0·10	0·2	0·00
Carbonic acid removable by air pump .	22·5	14·30	7·60	14·4	5·
„ evolved by phosphoric acid	42·2	0·70	0·00	41·8	0·60
„ Total	64·7	15·	7·60	56·1	5·60
Nitrogen	0·8	0·88	0·7	0·4	0·60

SALIVA.

Mayer‡ states that, after a very careful investigation of the salivary glands of a large number of animals in part prepared according to Pflüger's instructions and in part by other methods, he finds that, contrary to the statements of this observer, nerves *rarely* occur in the parenchyma of the salivary glands, those that are present chiefly belonging to the non-medullated fibres. He has never been able to trace any connection between medullated nerve-fibres and the alveoli, or to discover the free extremity of a non-medullated fibre in them when the appearances resembled those described and delineated by Pflüger. Further examination showed that the supposed nerves were really capillary vessels. He corroborates, however, the statement of Pflüger that the nuclei have processes communicating with corresponding ones from adjoining cells, and he thinks that these may *perhaps* be the terminations of the finest non-medullated secretory nerve-fibres.

Ewald,§ from injections made by means of constant mercurial pressure, corroborates the recent statements advanced respecting the configuration of the finest salivary ducts. He is opposed to the views of Heidenhain in respect to the so-called "crescent" or demilune found in the alveoli. Heidenhain demonstrated that the form of the excited gland differed considerably from the gland at rest; the alveoli in the former, moreover, being filled with protoplasmatic, the latter with disintegrated mucous

* 'Zeits. f. Biologie,' v, 1869, p. 310.
† 'Pflüger's Archiv,' i and ii.
‡ 'Schultze's Archiv f. Mikroskop. Anat.,' vi, p. 100.
§ 'Centralblatt, No. 37, 1870.

cells: and has sought to establish that in the place of the disintegrated mucous cells young cells are developed in the crescent, which constitutes their brooding-place, and is a marginal zone of protoplasmic cells existing in every alveolus. Ewald, however, declares he has never seen any such process of formation of cells from the "crescent;" on the other hand the mucous cells undergo very important changes, the protoplasm of the cell which ordinarily surrounds the lateral nucleus swelling out, and the cell-contents becoming granular, the nucleus itself taking up a more central position, so that ultimately no difference can be discovered between the central and the marginal cells. These two kinds of cells only differ in that the former possess, the latter are destitute of mucus, and they are consequently only varieties of the same cell.

PANCREAS. LIVER. BILE. GLYCOGEN.

Langerhans* publishes an essay on the microscopical anatomy of the pancreas, which, however, does not appear to contain any points of extraordinary interest. Saviotti† describes the ducts of the pancreas as terminating in fine intercellular passages similar to those admitted by Hering in the liver. Bernstein‡ found in his experiments on the pancreas that no secretion occurred during fasting, but that it attained its maximum from two to three hours after the ingestion of food, then diminished, increased again from about the fifth to the seventh hour, and fell to a minimum at the fifteenth hour. Irritation of the centric extremity of the cut vagus caused suppression of the secretion. Section of the nerves accompanying the pancreatic arteries caused persistent and abundant secretion. It was arrested by vomiting.

M. Legouis§ describes the structure of the pancreas of the osseous fishes.

M. Ch. Legros|| gives the results of his researches on the ultimate distribution of the biliary ducts, which he describes as forming a plexus of interlobular canals lined by a columnar epithelium from which a well defined system of intralobular passages is given off lined by tesselated epithelium. These contain the voluminous hepatic cells in their meshes. Very elaborate descriptions of the structure of the liver have also been given by Dr. H. D. Schmidt,¶ of New Orleans, of which a good abstract will be found in Dr. Lawson's 'Monthly Microscopical Journal' for August, 1870, and by Ewald Hering, in the third part of Stricker's 'Manual of Histology,' which will soon be in the hands of the members of this society. Both admit the existence of a fine plexus of biliary tubes running between and grooving the surfaces of the hepatic cells.

Kisselew,** of Charkow, finds, from injections made under the superintendence of Prof. Chrzonszczewsky, that the larger lymphatics of the liver possess proper walls composed of finely fibrillated connective tis-

* Inaug. Diss. Berlin, 1869.
† Max Schultze's 'Archiv f. Microscop. Anat.,' v, Heft. iv.
‡ 'Sitz. ber. der Sächs Akad.,' 1869, p. 96.
§ 'Comptes Rendus,' 1870, i, p. 1098.
|| 'Comptes Rend.,' 1870, i, p. 815.
¶ See 'New Orleans Journal of Medicine,' Oct. 1869.
** 'Centralblatt f. d. Med. Wiss.,' 1869, p. 147.

sue with an epithelial lining, whilst the capillary lymphatics consist of epithelium alone. These surround the intralobular blood-vessels in the form of a sheath. His results accord therefore in all respects with those of MacGillivry. Schmidt, of New Orleans (see above) contends that there is a direct continuity of structure between the hepatic tubules and the lymphatics of the liver.

Dr. Wolf* has experimented on the liver with a view of clearing up the differences of opinion that have been published on the question of the daily elimination of the bile, and has arrived at the following conclusion. The animals were dogs of the ages of eight and ten months, and the experiments were performed under the direction of Hoyer and Nowrocki. 1. The amount of secretion discharged is in direct relation to the relative size of the liver. Where this amounts to 1-20th of the body weight, the food given amounting to 400 grammes of meat and 100 grammes of bread, from 80—90 grammes of bile (about 3 oz.) were discharged per diem, containing 2·926 grammes of solids, including 1·846 grammes of biliary salts. 2. Small and young animals with relatively large livers secrete also a proportionately larger quantity of bile. 3. The amount of secretion in the same animal is dependent on the nature and amount of the food, being greatest with meat and bread, and increasing with the amount of flesh consumed, smaller with bread or rice alone, and smallest with fat alone. 4. It is greater by day than by night. It augments considerably in quantity for from two to four hours after food, then falls gradually even to half the amount, and again, after the lapse of 8—12—16 hours, increases, but in relation with the nature and quantity of the food previously taken.

The entire section on the liver is remarkably well given in Austin Flint's 'Physiology of Man' (vol. iii). He clearly shows from analysis of the blood of different parts that cholesterine proceeds from the disintegration of nervous substance. He endeavours to reconcile the conflicting statements of Bernard and Pavy in reference to the formation of sugar by the liver, by maintaining that only a very small quantity is formed at any moment, and that this is washed away immediately by the blood traversing the vessels. Burkart† and Hammarsten‡ both discuss the causes why the presence of bile arrests digestion. A good abstract of the last paper is given by Dr. Rutherford, in Humphry and Turner's 'Journal of Anatomy' (iv, p. 319). Burkart considered it to be due to the precipitation of pepsin by the bile, but Hammersten shows that, while partly owing to this, it is also and principally due to the circumstance that taurocholic and, in a minor degree, glycocholic acids render the albuminous compounds indigestible.

Tieffenbach§ in experiments made upon various animals in regard to the amount of glycogen contained by the blood, arrived at the conclusion that the further from the heart the blood is taken the less sugar it contains; that the blood of the portal vein and vena cava contain the

* 'Centralblatt f. d. Medicin. Wiss.,' 1869, p. 86.
† 'Pflüger's Archiv,' 1869, ii, p. 182.
‡ 'Virchow's Jahresbericht,' 1869, p. 101.
§ Inaug. Dissert. Konigsberg, 1869.

smallest amount of sugar, and that the sugar is, consequently, either destroyed in the circulation itself, or is excreted from the blood into the several organs of the body, as, for example, the muscles, in favour of which is the identity of muscle with liver sugar as demonstrated by Meissner. As a general rule, irritation and active movement of the animal considerably augmented the amount of sugar present.

Pflüger* finds that after destruction of the arterial nerves of the liver by pinching, bile continues to be secreted, whilst their irritation arrests it.

Bogomoloff† gives an account of the peculiarities under spectrum analysis of Gmelin's reaction of the bile, the biliary acids, chromogen, and Pettenkofer's test.

Other papers relating to digestion are, one by Hermann, an abstract of which will be found in Dr. Gamgee's "Report on the Progress of Physiology," in Humphry and Turner's 'Journal of Anatomy,' iv, p. 179, and Voit's papers in the 'Zeitschrift für Biologie,' 1869-70.

Boll‡ gives an elaborate description of the connective tissue of glands and of that of the submaxillary gland in particular. Ranvier (in the French translation of Frey's 'Histology'), describes the structure of the acinous glands, as the pancreas and salivary glands. Giannuzzi§ has fully described the pancreas and mammæ. Rollett‖ furnishes the results of his observations on the cæcal glands of the stomach, whilst Puky Akos¶ has examined the mucous glands of the oral cavity; and Schlemmer,** the glands of Brünner. Kemmerich†† discusses the formation of casein and of fat in the milk.

A series of papers published in the 'Lancet' (i, 1869), and another series in the 'Pharmaceutical Journal,' 1869, 1870, contain the most recent exposition of Liebig's views on the nutritive value of foods. Some interesting papers on various kinds of food will also be found in the recently established 'Food Journal.'

The valuable researches of Messrs. Parkes and Wollowicz‡‡ on the effect of alcohol on the human body (ethyl alcohol), and that of Binz§§ on the same subject, also deserve careful perusal.

LYMPHATICS. ABSORPTION.

M. Ranvier‖‖ describes certain serous or plasmatic canals in tendinous tissue. The tubes are longitudinal, 3-1000 mm. in diameter and 1-50

* 'Archiv f. Physiologie,' 1869, p. 190.
† 'Centralblatt, 1869, 528.
‡ 'Schultze's Archiv f. Mikrosk. Anatomie,' v.
§ 'Ricerche eseguite del Gabinetto de Fisiologia della R. Universita de Siena,' Anno ii, and 'Rivista Scientifica della Accademia de Fisiocritici,' ii, p. 38.
‖ 'Centralblatt f. die Medicin Wissensch.,' No. 21, 1870.
¶ 'Sitzungsberichte der Wien. Akad.,' 1869, lx, p. 31.
** Idem, p. 169.
†† 'Pflüger's Archiv,' ii, p. 401.
‡‡ 'Proceed. Roy. Soc.,' xviii, p. 362.
§§ 'Practitioner,' Sept., 1869.
‖‖ 'Comptes Rendus,' 1869, pp. 274 and 1478.

mm. in length, with abrupt endings. When contracted they form the spiral fibres of tendons of Henle.

Boehm* shows that pores exist on the arachnoid surface of the dura mater, which open into a lymphatic system, that is again in communication with the veins on the outer surface of the membrane.

That certain organs in fishes and reptiles belonging to the lymphatic system possess contractile power exercised rhythmically has long been known, but Heller† has shown that the lymphatics of the mesentery of the guinea-pig also contract rhythmically, and in an order and mode that is quite independent of either the respiratory movements or the cardiac pulsations; in one instance the lymphatic pulse was distinctly counted, and found to be 10 per minute, whilst the respirations were 40 and the cardiac beats 120 in the same space of time. An explanation is thus afforded of the movement of the lymph, and to some extent also of the process of absorption.

The time occupied by absorption, circulation, and secretion combined has been very clearly demonstrated by Proff. Macnamara and Haughton.‡ An old soldier, a patient of the Meath Hospital, suffering from hydrocele, was trained to urinate at the word of command, at intervals of one minute, into a succession of test tubes. When his training had been completed by a few days' instruction, the sac of the hydrocele was emptied and injected with two drachms of tincture of iodine. The patient then urinated at intervals of one minute into the test tubes previously prepared, commencing at one minute after the injection. The fourth test tube responded slightly to the starch test for iodine, and the fifth and subsequent tubes showed its presence very distinctly. From this experiment it is evident that the entire process, viz. absorption by the tunica vaginalis; transmission by the lymphatics and capillary veins to the heart; retransmission by the renal arteries to the kidneys; secretion of urine and its transmission to the bladder by the ureters, occupies less than four minutes, or about five times the entire time required for the circulation of the blood.

A. Menzel and H. Perco§ injected various nutritive materials subcutaneously in dogs, to determine the possibility of their absorption, and found that oils (olive, almond, liver), in quantities varying from one drachm to one ounce, were only slowly absorbed, nothing, however, remaining after forty-eight hours. Milk and solution of sugar were taken up more quickly, as was also yolk of egg. Similar results as regards the fat were obtained from experiments on man.

Legalas‖ shows that absorption, at least of iodide of potassium, takes place with extreme slowness, and only to a very small extent, from the bladder of man, a trace only being detectable in the saliva forty-eight hours after its injection, though it was almost immediately discoverable in the same secretion when it had been injected into the large intestine.

* 'Virchow's Archiv,' xlvii, p. 218.
† 'Centralblatt,' 1869, p. 545.
‡ 'Dublin Quart. Journ.,' 1870, xlix, p. 84.
§ 'Wien. Med. Wochens.,' 1869, No. 31.
‖ 'Comptes Rendus,' 1869, xii, p. 732.

Dr. Broadbent* demonstrates that the so-called "selective" absorption of the lymphatics is apparent only, and that so far from being selective and special, it is general and residual, the materials they take up being, in fact, merely the spare nutrient substances forced into the intertextural spaces, *i. e.* the commencement of the lymphatics, by the continued exudation of fresh fluid from the capillaries.

C. Voit and J. Baur† contribute a short paper on absorption in the large intestine, the essential point of interest in which is that the addition of common salt materially facilitates the process of absorption of albumen. Dr. Langhans describes the absorption of extravasation and the formation of pigment in 'Virchow's Archiv,' xlix, p. 66.

NERVOUS SYSTEM.

Arnst‡ gives a detailed description of the microscopic characters presented by the cortical substance of the brain of man, which appears to agree essentially with that given by Dr. Lockhart Clarke. He makes seven layers, and states they are most distinctly visible in the new-born child. The nerve-cells and fibres are all imbedded in a tender jelly-like tissue, in which no structure can be observed except granules and faint striæ. This structureless mass is, he thinks, a remnant of the embryonic granular protoplasm out of which nerve-fibres and nerve-cells are directly formed. The matrix is probably not inert, but the seat of important functions. The grey matter of the cerebral convolutions has also been carefully described by Prof. Cleland of Galway,§ who also contributes an interesting paper on the physical relations of consciousness and the seat of sensation.|| The most recent and complete accounts of the structure of the spinal cord and brain are given, the former by Gerlach and the latter by Meynert in Stricker's 'Manual of Histology,' a translation of which will speedily be in the hands of the members of the Society.

Dr. Broadbent¶ gives an account of the structure of the brain, obtained by investigating specimens hardened in spirit, showing that the commissural connection of the different parts of the hemisphere is more extensive than is generally admitted, and that the fibres more commonly run longitudinally in the convolutions than cross from one to the other, while large tracts of convolutions have no direct connection with the crus, central ganglia, or corpus callosum. The histology of the cerebellum has been carefully investigated by Obersteiner,** J. M. Strachan,†† and also by Hadlich,‡‡ abstracts of whose papers

* Humphry and Turner's 'Journal of Anatomy and Physiology,' iv, 1870, p. 14.
† München, 'Akad. Ber. Sitz d. Math. Physical. Class.,' 5 Dec., 1868.
‡ 'Archiv f. Mikroskop. Anatomie,' v, p. 317.
§ 'Quart. Journ. of Microscop. Sci.,' April, 1870.
|| Humphry and Turner's 'Journal of Anatomy,' v, p. 102.
¶ 'Proceed. Roy. Soc.,' June 17, 1869.
** 'Wien. Sitz. Ber.,' lx, 1869.
†† Graduation Prize Thesis, Edinb., 1869.
‡‡ 'Virchow's Archiv,' xlvi, and Schultze's 'Archiv f. Mikroskop. Anat.,' vi, p. 191.

will be found in Humphry and Turner's 'Journal of Anatomy,' iv, 1870.

Henle and F. Merkel,* Golgi,† Roth,‡ and Gerlach§ give full descriptions of the so-called connective tissue on neuroglia of the nervous system. Lepine|| describes the connective tissue of the perivascular canals of the brain as being traversed by a delicate filamentous tissue.

Dr. G. Schwalbe¶ describes the arachnoid space around the brain as a lymphatic space, and considers it to be connected with the choroidal space of the eye, the space containing the perilymph of the ear, and the lymphatic plexus of the Schneiderian mucous membrane. These observations are in favour of the view that the serous sacs are only great dilatations of the lymphatic system.

Weisbach,** in experiments made to determine the amount of water in the brain in relation to age, sex, and disease, found that as age advances the amount of water steadily increases in the brain. On the other hand, the commissures and the medulla oblongata have the largest quantity in youth. The brain of the female, corresponding to its smaller weight, contains also less water than that of the male.

Ranke, in the 'Centralblatt' for 1868, published observations showing that in tetanus the reaction of nerve substance changed from alkaline to acid, which was in opposition to the previously expressed results obtained by Heidenhain. In a paper in the same journal,†† Ranke gives the result of further investigations on the same subject, of which the following are the principal results:—1. The white substance (nerves) of the central organs is decidedly acid after tetanus. 2. The acidification appears to be more marked in the grey than in the white substance in warm-blooded animals, but the difference is not so well marked in frogs. 3. Thick nerve-roots excised from the spinal canal or cranium on several occasions, also gave a distinctly acid reaction. 4. The reaction of the nerve-trunks was less marked, partly on account of the blood they contain, which is always greatly increased in tetanus, and partly on account of the presence of connective tissue, which is always alkaline.

Schiff‡‡ has performed some very delicate experiments, apparently demonstrating that there is a disengagement of heat in the nerve and nervous centres when sensory impressions were made upon them. The elevation of temperature was rendered evident by very minute thermo-electric piles constructed of bismuth and copper, and the experiments were chiefly performed on fowls.

Hirsch§§ contributes a paper on Donders' experiments to determine the velocity of the psychical function of the brain, in which he points

* Henle and Pfeuffer's 'Zeitsch.,' xxxiv, p. 49.
† 'Rendiconti d. R. Istitut Lomb.,' iii.
‡ 'Virchow's Archiv,' xlvi.
§ Stricker's 'Handbuch der Lehre von den Geweben,' cap. xxx.
|| 'Archives de Physiologie,' No. 3, 1869.
¶ 'Centralblatt,' 1869, p. 465.
** 'Wien. Med. Jahrb.,' xvi, p. 46.
†† No. 7, 1869.
‡‡ Brown-Séquard, 'Archives de Physiologie,' 1870.
§§ 'Archives des Sciences,' April 15, 1869, and 'Student,' 1869, p. 362.

out that the brain requires about 50-1000ths of a second to distinguish and signalise the distinction between two colours. To determine the duration of the psychical act Donders suggested the intercalation into the series of functions comprised in the physiological time certain fresh terms of purely psychical action conceiving the retardation that would then occur would serve as a measure. Thus, instead of simply registering a sensation of light with one hand, M. Donders added to the sensation of sight an alternation of perception and volition, by asking the patient to make his signal with the right hand when he perceived a red object, and with the left when a white. In this case the psychical action prolonged the physiological time occupied in the perception of light 0·154 sec. It was found that the sense of sight required nearly three times as long to distinguish between two letters as the ear required to distinguish between two vowel sounds.

M. Colin* shows that there is no relation between the volume of the encephalon and the degree of intelligence exhibited by various classes of the animal kingdom.

M. C. Dareste† gives various instances in support of his theory that in a natural group of animals the convolutions of the brain are developed in proportion to the size of each species.

Prof. Goltz‡ shows that after careful removal of the cerebrum in frogs the animals remain perfectly silent and immovable, unless irritated, but can still retain their equilibrium, as shown by their endeavours to climb up an inclined plain that is gradually more and more tilted, and when gently stroked down the back, croak. He has also established that intense irritation of sensory nerves exercises a powerful depressing influence on the reflex activity generally. And the same conclusion has been arrived at by Lewisson.§

Brown-Séquard has continued in his 'Archives of Physiology' his experiments on the different species of conductors for sensory impression on the spinal cord, and on the artificial production of epilepsy.

The position and size of the reflex centres of the several nerves issuing from the spinal cord of the frog has been investigated by Masius and v. Lair;‖ and Meynert¶ discusses the subject of the twofold origin of the spinal cord from the brain.

Hermann and Escher** show that the functions of the brain are interfered with and convulsions produced by arrest both of the arterial and venous currents, the immediate cause being disturbance of the exchange of gases between the blood and the nervous tissue; and Nasse†† endeavours to show that, whilst blood containing a deficiency of oxygen does not appear to constitute an irritant to the nerve centres, blood containing an excess of carbonic acid, whether absolute or only relative to the amount of oxygen present, is so to a powerful degree.

* 'Comptes Rendus,' Janvier 10, 1870.
† Ibid., i, p. 193.
‡ 'Beiträge zur Lehre von den Functionen der Nerven Centra des Frosches,' Berlin, 1869.
§ 'Reichert und Dubois Reymond's Archiv f. Anatomie,' 1869, p. 255.
‖ 'Centralblatt f. d. Med. Wiss.,' 1870, No. 1.
¶ 'Wien. Sitzungsber.,' 1869, p. 1.
** 'Pflüger's Archiv,' 1870, p. 3.
†† 'Centralblatt,' 1870, No. 18.

A considerable number of researches have been directed to the determination of the mode in which the nerves terminate at the periphery. Thus—

P. Michelson * has given a careful and accurate description of the histology of the corpuscles of Pacini. The central part he considers to be protoplasm, and the fibre running through it a finely striated axis-cylinder, without either medullary or primitive sheath, as shown by the degeneration consequent on section.

An excellent paper on the same subject is given by M. Ciaccio,† an analysis of whose observations is contained in the 'Academy' (i, 1870). He shows that the capsules are much less numerous in the bird than in the mammal, and the corpuscles are altogether of simpler structure. The nerve-fibre always ends in a cell.

Grandry‡ describes the mode of nerve termination in the skin, and especially in the corpuscles of Vater, in which he maintains that axis cylinders terminate in one or several rounded granular masses (of protoplasm). According to Nepveu § the structure of the corpuscles of Pacini is nearly the same in apes, and especially in the higher apes, as in man. Schultze has briefly described the Pacinian corpuscles in his article on the nervous system in Stricker's 'Manual of Histology.' Podcopaew|| and Helfreich¶ also treat, the former of the mode of termination of the nerves in the skin, the latter of their termination in the conjunctiva and sclera, where, he states, they form a subepithelial plexus.

Bense ** gives full details of the mode in which the nerves terminate in the sexual organs. He states that round terminal bulbs are common in the glans penis and clitoridis.

Krause †† describes the nerves of smooth muscle as terminating in a kind of terminal plate, consisting of protoplasm, in which are imbedded several oval transparent nuclei.

Trütschel ‡‡ maintains that the nerves of the stomach end in terminal bulbs, some of which give off extremely fine processes, that run up between the epithelial cells.

Pflüger§§ extends his views on the mode of termination of nerves in glands to the liver. He believes the nerves terminate in the cells themselves.

The subject of the termination of the nerves in the salivary gland-cells is very fully discussed by Mayer|||| and by Krause,¶¶ the former of whom corroborates Pflüger's statements, whilst the latter appears to

* 'Archiv f. Mik. Anat.,' v, 145.
† Moleschott's 'Untersuch. zur Naturlehre,' Giessen, 1870.
‡ 'Journal de l'Anatomie,' vi, p. 390.
|| 'Annales des Sciences Naturelles,' xii, p. 326.
§ 'Schultze's Archiv,' v, p. 506.
¶ Pamphlet, Wurzburg, 8vo.
** 'Zeitschrift f. rat. Med.,' xxxiii, p. 1.
†† 'Reichert und Dubois Reymond's Archiv,' 1870.
‡‡ 'Centralblatt f. d. Med. Wiss.,' 1870, No. 8.
§§ 'Pflüger's Archiv.,' ii, 459.
|||| 'Archiv f. Mikroskop. Anat.,' vi, p. 100.
¶¶ 'Reichert und Dubois Reymond's Archiv,' 1870, p. 9.

regard them as doubtful. The most recent exposition of Pflüger's views are contained in his article on the termination of the nerves in the salivary glands, in Stricker's 'Manual of Histology,' i, p. 433.

F. Bidder* gives a careful description of the anatomical characters of the splanchnic nerves and cœliac ganglion. In the latter he finds bipolar cells, square or cubical cells, and more abundant than either of these multipolar cells, with at least twelve processes. There were also certain club-shaped cells, giving off a strong nerve-fibre from the cell-substance, and a system of fine fibres from the nucleus. From the results of sections, accompanied by subsequent microscopical examination, to determine the side on which degeneration occurred, he is inclined to consider the fine plexus as the origin of the sympathetic fibres.

TASTE.

In regard to the ORGANS OF SENSE, excluding the eye, to which a special section of this Retrospect is devoted, the principal papers that have been published are those of—

Dr. R. L. Maddox,† who contributes an account of the minute anatomy of the fungiform papillæ and terminal arrangement of the nerves in striped muscular tissue in the tongue of the common frog. He describes the nerves to muscle as terminating outside the sarcolemma of the muscles in nuclear masses, from which fine fibres are again given off.

Lussana‡ seeks to explain the discrepancy that has existed between authors as to the gustatory sensibility of the lingualis nerve. He arrives at the conclusion—(1) that the lingual nerve is a nerve both of common sensation and of taste for the anterior part of the tongue; (2) that the glosso-pharyngeal is the gustatory nerve of the posterior part of the tongue; (3) that the gustatory sensibility of the anterior part of the tongue is not dependent on the proper branches of the fifth but upon the fibres of the chorda tympani that are mingled with them.

Schiff§ endeavours to prove that the anterior part of the tongue is supplied by branches from the spheno-palatine ganglion.

Vulpian,|| on the other hand, considers, from evidence drawn from the microscopical appearance of the lingual after evulsion of the facial, that the chorda tympani is destined for the submaxillary gland, and furnishes no branches to the tongue, and hence that it is not a gustatory nerve.

V. Wyss¶ very carefully and fully describes the cup-shaped organs of the tongue in man and various mammals. An analysis of his paper will be found in vol. i of the 'Academy.'

Fr. Keppler** has made a series of experiments with common salt, quinine, phosphoric acid, and glycerine, to determine the delicacy of

* 'Reichert und Dubois Reymond's Archiv,' 1869, p. 472.
† 'Monthly Microscopical Journal,' i, 1869, p. 1.
‡ 'Archiv. d. Physiol. Norm. et Path.,' i, p. 20.
§ 'Lo Sperimentale,' 1870.
|| 'Archiv de Physiol. Norm. et Pathol.,' ii, p. 209.
¶ 'Max Schultze's Archiv fur Mikroskop. Anat.,' June, 1870.
** 'Pflüger's Archiv,' ii, 449.

discrimination of the taste. In each instance a standard solution was prepared, with which sometimes stronger sometimes weaker solutions of the several substances were compared. It was found that with a difference amounting to 2·5 per cent. between the standard and trial solutions correct answers were given in 53 out of 100 experiments. When the difference amounted to 10 per cent., 80 per cent. of the answers were accurate. With quinine and common salt the sensitiveness to variation increased with increasing concentration, but the opposite obtained with the others.

EAR.

Professor Rudinger, of Munich, has published a beautifully illustrated work on the minute anatomy of the ear, in which he gives the results of his investigations on the mode of termination of the auditory nerves in the ampullæ and sacculus. He describes the nerves as entering the ampullæ by perforating the basal membranes on their floor, and thus reaching the epithelial layer with which they are lined. The epithelial layer, which is transitional in form in the greater part of the circumference of the ampullæ, becomes remarkably increased in thickness at their base; and here two principal varieties are found, one of obtuse cylindrical form, the other spindle-shaped and ciliated. The former are of the nature of supporting cells, the latter appear to be the real terminations of the nerves; for on tracing the nerves into the epithelial layer they are found to form a plexus, with swellings at the points of intersection and elsewhere, and from the plexus fibres are given off that penetrate the fusiform cells, and when acted on by perosmic acid may be traced as a black stria running through each cell to the nucleus, and from thence onwards towards the periphery, where it appears to be continuous with the cilium, in which each of these cells terminates.

Prof. Rudinger* has also given a description of the vascular supply of the ossicles of the tympanum, whilst Dr. J. Kessel† gives the nerves and lymphatics of the tympanum.

TACTILE SENSE.

MM. Arloing and Tripier,‡ from experiments on the effects of sections of nerves relatively to the state of sensibility of the skin and peripheric extremity of the nerves, arrive at the following conclusions:—(1) The sensory fibres are not quite so functionally independent as has been hitherto believed. (2) The reciprocal dependence of the sensory nerves of any region is such that if one of them be divided the peripheric extremity possesses recurrent sensibility, like the anterior roots of the spinal nerves. (3) The existence of a cutaneous nervous plexus is physiologically demonstrated by the conditions under which this recurrent sensibility is exhibited, which, they think, may influence practice. These experiments were principally made on dogs, certain branches of the radial nerves being exsected, and yet sensibility was found not to be lost in the digits supplied.

MM. Kottenkamp and Ulrich§ undertook, at Virordt's suggestion, a

* 'Centralblatt,' 1869, p. 355.
† 1869, p. 356 and 369.
‡ 'Comptes Rendus,' 1869, p. 547.
§ 'Zeitschrift für Biologie,' vi, p. 37.

careful inquiry into the sense of locality possessed by the skin of the upper extremity, and the results they obtained have been employed by M. Vierordt to demonstrate the truth of his hypothesis made in Pflüger's 'Archiv,' that the delicacy of the sense of space stands in relation to the mobility of the part.

Dr. Radcliffe* has published his researches on animal electricity, chiefly bearing on nerve and muscle current, and showing that they may, to a great extent, be regarded as phenomena due to *tension*.

RESPIRATION. ANIMAL HEAT.

M. Paul Bert† corroborates the statements of Traube, Bernard, and Schiff, that the respiration may be arrested by strong irritation of the pneumogastric or laryngeal nerves, or of those distributed to the Schneiderian mucous membrane, though he does not find with Schiff that irritation of the sensory nerves checks it. The arrest is much more easily obtained during expiration than during inspiration. He has also‡ convinced himself that the lungs contract under the influence of the vagi. His great work on Respiration contains a full account of all that is known upon the subject, with the results of much original investigation. Dr. Ransome§ has constructed an ingenious instrument for ascertaining the extent of the movements of the chest, and shows that in ordinary breathing in adults these are very small and irregular, the usual dress constituting a marked impediment to their freedom. Their extent varies greatly with age, and the upward movement exceeds the forward.

L. Bergeon‖ maintains that the inspiratory bruit is heard in the thorax, but not in the trachea, whilst the expiratory bruit is chiefly audible in the trachea, a little below the glottis. He explains the latter as originating in the striking of the air against the basis of the epiglottis and the upper vocal cords. Similar conditions for the production of sound exist in the vascular system when there is insufficiency of the aortic valves, and hence these sounds closely resemble the expiratory.

The results of Reinhardt's experiments¶ give a much lower figure for the amount of carbonic acid eliminated by the skin than is generally admitted. Taking the total quantity excreted per diem by the lungs and skin at 909 grammes when at rest, the proportion of CO_2 eliminated by the skin to that of the lungs is as 1 : 400. In regard to the water, on the other hand, the total quantity being estimated at 600 grammes, the proportion excreted by the skin is, to that by the lungs, as 2 : 1. He observes, however, that the quantity of carbonic acid eliminated by the skin may, under certain circumstances, be doubled, whilst that discharged by the lungs never varies to this extent. Different parts of

* 'Proceed. Roy. Soc.,' 1869, xvii, p. 577.
† 'Archives de Physiologie,' 1869, ii, p. 179 and 322.
‡ 'Comptes Rendus,' 1869, lxix, No. 8.
§ 'Journal of Anatomy,' iv, 1870, p. 140.
‖ 'Comptes Rendus,' lxviii, p. 431.
¶ 'Zeitschrift für Biologie,' v, p. 28.

the skin also give off very different amounts of watery vapour, so that if that evaporating from the cheeks be estimated at 100, that from the forehead may be taken at 96, from the volar surface of the hand at 90, from the scapular region at 64, from the infra-clavicular region at 45, and from the forearm 45. The presence of the epidermis renders the evaporation of water from the surface from 60 to 80 times less than it would be were there no hindrance to the process of evaporation from the whole surface of the body. M. Bachl* maintains that if any, only the very smallest trace of ammonia is eliminated by the lungs, and it is at all events quite insufficient to render it necessary to calculate it in any experiments on the balance of the animal economy.

The investigations conducted by M. Berns,† on the influence exerted by different kinds of gases on the respiration, appear to show that it is the carbonic acid in the *air* contained in the air-cells of the lungs that constitutes the real excitant to the extremities of the vagus nerve. N. O Bernstein‡ finds that when two portions of blood containing very different proportions of carbonic acid and oxygen are retained on opposite sides of a thin septum for five to seven and a half hours, no noticeable passage of oxygen occurs from the most highly oxygenized to the other, but a small quantity of carbonic acid diffuses from the most highly carbonized to the opposite. G. v. Liebig§ finds that variation in the pressure of the atmosphere, *cæteris paribus*, produces little effect on the respiratory process as a whole, the greater number of respirations made under ordinary pressure being exactly compensated for by their greater depth under increased pressure. Dr. Ransome‖ shows that in ordinary respiration about 0·2 of a gramme or 3 grains of organic matter is given off from a man's lungs in twenty-four hours, and a much larger proportion in diphtheria and other diseases.

A series of experiments undertaken by Dr. Lombard,¶ with the aid of extremely delicate thermometric apparatus, enabling him to register a variation of temperature not exceeding 1-2000th of a degree Centigrade, leads him to draw the general conclusion that in those animals in which the skin takes an active part in the elimination of water, the blood, as it traverses the lungs, undergoes, under ordinary circumstances, little or no refrigeration.

J. Müller** has recently undertaken, at Ludwig's suggestion, an experimental investigation upon the exchange of gases taking place in the lungs.

M. Andral†† shows that the temperature of the axilla of the newly born child is above that of the adult, the excess being probably derived from the uterus. During the first half hour it falls below the inferior limit of the temperature of the adult, partly, perhaps, because the respi-

* 'Zeitschrift für Biologie,' v, p. 61.
† 'Nederland's Archiv,' v, p. 179.
‡ 'Berichte der Sächs Gesell. d. Wiss. Math. Phys. Class.,' 1870, p. 124.
§ 'Zeitschrift für Biologie,' v, Heft i, p. 1.
‖ 'Journal of Anatomy,' iv, 1870, p. 211.
¶ 'Archives de Physiologie,' ii, p. 1, 1869.
** 'Arbeit aus der Physiolog. Institut zu Leipzig.'
†† 'Comptes Rendus,' 1870, i, p. 825.

ratory function is not fully developed, and partly, and he thinks chiefly, owing to the cold produced by the evaporation of the amniotic fluid. After the second hour it reacquires the ordinary temperature of the adult, and presents the same physiological variations as in the adult period of life. These statements agree with those of Dr. John Davy, but are opposed to those of W. Edwards and Dupuytren.

Dr. Finlayson* finds the daily range of temperature greater in healthy children than that recorded of healthy adults.

Mr. Blake† obtained the following results from a series of experiments, undertaken with a view to determine the relative temperature of the two sides of the body:—(1) The temperature of the two sides of the trunk under usual circumstances, *i. e.* in health and at rest in a temperate climate, is equal. (2) Under certain conditions the temperature of the left side of the trunk may exceed that of the right. (3) The excess during exertion in a cool atmosphere averages half a degree Fahr. (4) The excess reaches its maximum, about one degree Fahr., during exertion in a powerful sun.

Dr. H. Fischer,‡ from experiments on animals and observations on man, considers it to be probable that a centre exists in the anterior portion of the cervical segment of the spinal cord, possessing a controlling or regulating power over the temperature, so that, when excited, the temperature of the body falls, whilst when irritated it rises.

S. Ringer§ gives the average maximum temperature of the day in persons under twenty-five years of age at 99·1° Fahr., of those over forty 98·8°. There is a diurnal variation, the highest temperature extending from 9 a.m. to 6 p.m., the lowest from 11 p.m. to 1 a.m. The diurnal variation does not exceed from 1—2° according to age.

The more important physiological changes induced in the human economy by change of climate have been interestingly discussed by Dr. A. Rattray.‖ He shows that the capacity of the chest increases in a warm climate; the respirations are less frequent. The pulse is about 2—3 beats lower in the tropical zone than in the temperate. The temperature of the body is exalted.

H. Jacobson and M. Bernhardt¶ and Georg Laudien** all agree that the inflamed part is always lower than that of the centre of the circulation, though it is higher than that of the corresponding sound parts of the opposite side. Laudien states that the blood going to an inflamed spot is warmer than the seat of inflammation itself.

Lewitzky†† shows that quinine injected into the jugular vein of a rabbit causes a retardation of the beats of the heart, renders the respiration more shallow, and lowers the animal temperature.

The amount of carbonic acid and of watery vapour eliminated by the

* 'Glasgow Med. Journ.,' Feb., 1869.
† 'Med. Times and Gazette,' Oct. 8, 1870.
‡ 'Centralblatt,' 1869, p. 259.
§ 'Proceed. Roy. Soc.,' xvii, 1869, p. 287.
‖ 'Proceedings of the Royal Society,' xviii, p. 513.
¶ 'Centralblatt,' 1868, p. 289.
** Idem, p. 291.
†† Idem, Nos. 13 and 14, 1869.

skin under ordinary circumstances has been investigated by Reinhard.* From the results obtained from experiments made upon his arm he calculates that from 33 to 36 grains of carbonic acid gas are eliminated from the whole body per hour, which is somewhat less than the estimates of Scharling and Gerlach. The quantity of watery vapour underwent considerable absolute variation, but the proportion discharged from particular regions remained tolerably constant, so that, taking an equal surface of the cheek (lined by the moist mucous membrane of the mouth), the volar surface of the hand, and of the forearm, the quantities were expressed by the numbers 100 : 90 : 45.

Leube† establishes the presence of urea in the perspiration of both healthy and diseased persons, and shows that the skin acts, to a certain extent, vicariously to the kidneys in the discharge, not only of urea but of phosphoric acid and chlorine.

W. Marcet‡ has made a series of observations on the temperature of the body at different heights when at rest, and during the ascent of Mont Blanc. A similar essay by M. Lortet will be found in the 'Comptes Rendus' for Sept. 20th, 1869, and 'Student,' 1869, p. 271.

Other papers on the same subject are those of

Horwath (of Kiew),§ on the effects of the withdrawal of heat from the body (heat inanition).

R. Simons,‖ Provisional communication on a new cause for depression of the animal heat.

Richardson,¶ on increment of animal heat.

Garrod,** on some of the minor fluctuations in the temperature of the body when at rest, and their cause.

M. Gréhant,†† on the respiration of fishes, and‡‡ on the absorption of carbonic oxide.

Mr. Billings,§§ on the respiratory organs of echinoderms. MM. Pettenkofer and Voit‖‖ on the respiration of the dog whilst fasting, and on an exclusively fatty diet.

Lossen,¶¶ on the influence exerted by the number and depth of the respirations on the excretion of carbonic acid and water.

MUSCLE.

The histology of the muscular tissue amongst the invertebrata has been carefully worked out by M. Schwalbe,*** Franz Boll,††† Fritz Ratzel,‡‡‡ Heppner,§§§ and Schneider,‖‖‖ whilst Grenacher,¶¶¶ Hensen,**** Krause,†††† have chiefly occupied

* 'Zeits. für Biologie,' 1869, p. 28.
† 'Deutsches Archiv f. Klin. Med.,' vii, p. 1.
‡ 'Arch. des Sci. Phys.,' xxxvi, p. 247.
§ 'Wiener Academ.,' Aug., 1870, No. 11.
‖ Inaug. Dissert., Bonn, 1870.
¶ 'Med. Times and Gazette,' 1869.
** 'Proceed. Roy. Soc.,' xvii, p. 419.
†† 'Ann. des Sci. Natur.,' xii, 1869.
‡‡ 'Comptes Rendus,' lxx, p. 1182.
§§ Silliman and Dana's 'American Journ. of Science and Art,' Jan., 1870.
‖‖ 'Zeitschrift für Biologie,' v, Heft iii, 1869.
¶¶ Idem, vi, p. 298, 1870.
*** 'Max Schultze's Archiv f. Mikroskop. Anatomie,' 1869, v, Heft ii, p. 205.
††† Supplement to 'Max Schultze's Arch.,' 1869.
‡‡‡ 'Zeits. für Zool.,' xix, p. 257.
§§§ 'Archiv f. Mikroskop. Anatomie,' v, p. 137.
‖‖‖ 'Zeits. für Zool.,' xix, p. 284.
¶¶¶ 'Zeits. für Zool.,' xix, p. 287.
**** 'Arbeiten aus der Kieler Phys. Inst.,' 1869.
†††† 'Zeitschrift für Biologie,' 1870.

themselves with the structure of the muscle of vertebrata. According to Hensen, in the fibres of a muscle at rest every transverse stria may be seen to be divided into two halves by a dark line, to which he has applied the term median disc. There is, consequently, in muscle not merely an alternate arrangement of a strongly refracting substance, the transverse disc, and a feebly refracting substance, the intervening substance, but superimposed on one half of the transverse disc is a layer of feebly refracting substance, the median disc; then follows the second half of the transverse disc, and lastly, the intermediate substance. Krause, in a critique on this paper, denies the accuracy of the observations, and thinks the median disc is a product of manipulation. According to him the median disc of Hensen is the central portion of the dark stria become paler by the action of water, and rendered still lighter by comparison, in consequence of the places of contact between the dark or anisotropal substance and the light or isotropal substance becoming more marked. Both observers admit the presence of a fine line crossing the clear or isotropal substance, as stated by Dr. Carpenter long ago.

Montgomery* maintains, from observations made some years ago, that the transverse striæ only appear in muscle during contraction, and that when at rest and extended they are absent. He considers that the process of contraction is dependent upon chemical changes, essentially similar in kind to coagulation; and he thinks the nucleated plates in which the nerves terminate are secretory apparatus, the secretion of which induces the coagulation. Dr. Schmulewitsch, on the other hand,† finding that the elasticity of muscles is augmented by increased heat, whilst their capacity to perform work also and coincidently increases, believes that the essential rôle in the act of contraction is played by the constantly existing attractive force exerted by the molecules on one another. Th. Klunder‡ finds that the duration of the stage of latent excitation in muscle is 3-400ths of a second, increasing with greater weighting and exhaustion to above 0·01 of a second.

Schenk§ has analysed various specimens of muscle, and finds considerable variation in the amount of nitrogen present, so that mean or average numbers are of little importance—a point worthy of special notice on the part of those making experiments on nutrition and the metamorphosis of tissue.

Nasse‖ corroborates the statements of Limpricht and McDonnell that glycogen is a constituent of muscular tissue, finding it constantly in the muscles of frogs in the proportion of from 3—5 per 1000, and in those of rabbits in the proportion of from 4—5 per 1000. No sugar exists preformed in muscle. During rigor mortis and muscular activity the amount of glycogen diminishes and of sugar augments. In another series of experiments he finds a solution of common salt containing 0·6 per cent., as that which most favours the preservation of muscular irritability.

M. Becquerel,¶ in an important paper presented to the French Aca-

* 'Centralblatt,' 1870, p. 161.
† 'Centralblatt,' No. 39, 1870.
‡ 'Arbeiten aus der Kiel. Physiol. Inst.,' p. 107.
§ 'Sitz. d. Wien. Akad.,' lxi.
‖ 'Pflüger's Archiv d. ges. Physiologie,' ii, p. 97.
¶ 'Comp. Rend.,' Jan. 10, 1870.

demy of Sciences, maintains that the electrical currents so easily demonstrable in muscle, nerve, and other tissues passing from the interior to the exterior through a conductor, are due to the reaction of the fluids of the interior, which are alkaline, on the fluids of the exterior, which are acid or neutral. As putrefaction advances the interior becomes the most strongly acid, and the current then flows in an inverse direction.

M. Maury* had previously ingeniously investigated the movements of the wings of hymenopterous insects in flying by gilding their tips, and shown that they describe a figure of eight; and he now, by making the wing touch a smoked glass, shows that the wing moves from behind forwards, both in its descent and in its ascent. The plane of the wing changes twice during its revolution; during the descent the wing presents its superior face a little forward, during the ascent this face a little backwards.

Some good papers by Henke will be found on the Muscle and Joints in Henle and Pfeuffer's 'Zeitschrift,' xxxiii, p. 108. See also S. Haughton,† on the difference between a hand and a foot, as shown by their flexor tendons.

KIDNEY.—URINE.

Demet. Rindowsky, of Charkow,‡ has instituted a series of microscopical examinations of the lymphatics of the kidney in the dog and horse, and finds that they accompany the blood-vessels (arteries as well as veins) in the adventitia of which they run; the larger arteries are accompanied by two, which form a plexus around each. The vas efferens is also surrounded by a lymphatic plexus, which penetrates with it into the interior of the Malpighian capsule, and the several branches of which are continued to the glomerulus. Moreover, the efferent vessel is surrounded by a plexus of lymphatics, as are the tortuous and straight urinary tubules. All the lymphatics, even to the minutest branches, possess proper walls with an epithelial investment.

O. Pollack§ has investigated the urine of infants of both sexes whilst at the breast, and varying in age from eight days to two and a half months. The quantity varied from 250—410 CC.; the colour was always very pale; the reaction acid; the sp. gr. 1·005—1·007. The quantity of urea discharged in twenty-four hours varied from 1—2 grammes. The uric acid is relatively large, 0·1—0·2 grammes in the same period. The inorganic salts, and especially the earthy phosphates, are in small quantity. The fluid was cloudy from the presence of mucus, and more sugar (derived from the milk) was found than in the adult.

Gréhant‖ publishes his physiological researches on the excretion of urea by the kidneys, showing that the kidneys, so far as the urea is concerned, are purely excretory, and in no way secretory organs. Cyon¶ maintains that the urea is in part, at least, formed in the liver. Though scarcely proper to include under this heading, we may refer

* 'Comptes Rendus,' 1869, p. 667. † 'Proceed. Roy. Soc.,' xviii, p. 359.
‡ 'Centralblatt f. d. Med. Wiss.,' No. 10, 1869.
§ 'Jahrbuch f. Kinderheilkunde N. F.,' ii, p. 27.
‖ 'Bibliothèque de l'Ecole des Hautes Etudes Sect. d. sc. Nat.,' i, p. 265.
¶ 'Centralblatt,' No. 37, 1870.

those who are interested in such a subject to a valuable paper by Dr. Nicholson* on the relation of the body weight, and excretion of urea in fasting, as observed amongst prisoners.

M. Thudichum† describes a new acid, the kryptophanic, which he has found to be a constant constituent of the urine; it is transparent, non-crystallisable, soluble in water, less so in alcohol, and still less in ether.

E. Schunck‡ gives the details of a process by which the presence of a fatty acid and of oxaluric acid can be demonstrated in the healthy urine of man. Jaffe§ obtains a new pigment common to the urine and the bile, to which he has given the name of urobilin, characterised by its remarkable fluorescence when chloride of zinc is added to its alkaline solution.

H. Struve‖ found that, in patients who had taken large doses of iodide of potassium, only about 65 per cent. was eliminated by the urine and saliva, the rest being probably excreted by the intestinal mucous membrane, and that all was eliminated in the course of from ninety-two to ninety-seven hours.

M. Peyrani¶ endeavours to show the influence of the sympathetic nerve on the secretion of urine. His experiments were made on many dogs and rabbits, and on a few cats, with the following results: the quantity of urine and of urea is increased in proportion to the strength of the currents, whether continuous or induced, passed along the sympathetic in the neck, though the latter are relatively much more energetic in their action. Section of the sympathetic reduces the secretion to a minimum, but an augmentation occurs on stimulating the peripheric end.

The works on development have been comparatively few in number. Those of Truman,** His, Dursy, Schenk, Goette,†† and Parker,‡‡ are the most important.

AIDS TO RESEARCH.

Wenham,§§ Ross,‖‖ Müller,¶¶ Blankley,*** Marshall,††† Browning,‡‡‡ Collins,§§§ Pigott,‖‖‖ Hagen,¶¶¶ Holmes,**** Stephenson,†††† Zentmayer,‡‡‡‡ all suggest improvements and modifications of microscopes. Maddox,§§§§ Mouchet,‖‖‖‖ and Stirling,¶¶¶¶ have invented new instruments for cutting sections. Toldt, Strethill-Wright, McNab, and Bastian, have proposed various modes of staining and preparing objects for the microscope. Lastly, Dr. B. Sanderson and Prof. Stricker have suggested a convenient form of apparatus for observing the circulation in the omentum of small mammals.

* 'British Medical Journal,' 1870, i.
† 'Comptes Rendus,' i, 1870, p. 539.
‡ 'Proceedings of the Royal Society.'
§ 'Virchow's Archiv,' xlvii, p. 405.
‖ 'A. d. Bulletin de l'Acad. des Sciences de St. Petersburgh,' xiii.
¶ 'Comptes Rendus,' i, 1870, p. 1300.
** 'Month. Mic. Journ.,' vol. ii, p. 185.
†† See 'Centralblatt' for 1869-70.
‡‡ Ray and Roy. Soc. Publications, 1869-70.
§§ 'Monthly Microscop. Journal,' 1869, i, p. 111, and ii, p. 158.
‖‖ Idem, pp. 58 and 131.
¶¶ Ibid., i, p. 174.
*** Ibid., i, p. 212.
††† Ibid., i, p. 239.
‡‡‡ Ibid., ii, p. 65, and iv, p. 68.
§§§ Ibid., iii, p. 217, iv, pp. 52 and 104.
‖‖‖ Ibid., iii, p. 295, iv, pp. 192, 305.
¶¶¶ Ibid., iv, p. 96.
**** Ibid., iv, p. 273.
†††† Ibid., iv, p. 61.
‡‡‡‡ Ibid., iv, p. 160.
§§§§ Ibid., i, p. 55.
‖‖‖‖ Ibid., iv, p. 75.
¶¶¶¶ 'Journal of Anatomy,' iv, p. 230.

REPORT ON PRACTICAL MEDICINE.

BY

A. B. SHEPHERD, M.A., M.B., M.R.C.P.

A. Diseases of the General System.

Inflammation and Suppuration.

The years 1869-70 have seen no diminished interest in the question regarding the origin of pus-cells; and while Virchow's theory, in which the connective-tissue corpuscle is pathologically all in all, has been but indirectly challenged, experiments have been multiplied in support of Cohnheim's view, according to which the process of inflammation is characterised by the passage of the white cells through the vessel-walls, as well as on the side of the older (?) school, which asserts that the cellular elements, said to be extravasated, originate in an amorphous blastema; the greatest champion, probably, of the latter doctrine at the present time being M. Robin.

Cohnheim ("Ueber das Verhalten der fixen Bindegewebskörperchen bei der Entzündung," 'Virch. Arch.,' xlv, 333) gives an account of his microscopic researches on the condition of the cornea in frogs after the production of artificial keratitis (by cauterization with nitrate of silver), together with similar experiments on the papillæ of the tongue in the same animal. From his observations he believes it to be proved that the stellate connective-tissue corpuscles of the cornea take no part in the inflammatory process, either by division or otherwise, but remain unchanged (l. c., p. 334); and that, if only the name "pus-cells" be not given promiscuously to all morphological elements found in inflammatory deposits, but only to "colourless cells, containing one or more nuclei, and endowed with contractility and the amœboid faculty of changing form" (l. c., p. 350), their only source, or at least their only primary source, must, for the present, be sought for in the blood-vessels of inflamed tissue.

On the same side Hayem ('Gaz. Méd. de Paris,' 1870, pp. 3, 40, 53) gives the results of his experiments on the mesentery, tongue, and lung of frogs, agreeing in almost every particular with the conclusions arrived at by Cohnheim. Whatever the tissue employed, the inflammatory and suppurative processes took place in the same manner; and the order of succession of phenomena, as observed especially in the mesentery, was as follows: 1. Dilatation of the arteries. 2. Dilatation of all the vessels. 3. Contraction of the arteries and dilatation of the veins

and capillaries. At the same time occurred a gradual retardation of the circulating fluid, stasis at some points in the capillaries, extravasation of the white corpuscles in great numbers, and of a few red cells. He differs from Cohnheim, in regarding the dilatation of the arteries as being only temporary, and followed sooner or later by a persistent moniliform contraction more or less marked, contrasting strongly with the permanent and very evident dilatation of the veins. He agrees with him as to the connective-tissue corpuscles of the tongue, that they undergo no proliferation, but only passive alterations of nutrition, and he discovers in the frog's mesentery elements closely analogous to those described by Cohnheim, irregular, finely granular, without multiple processes, and containing usually a spot, more or less pale, representing the nucleus; he shows also that the same kind of corpuscles in the lung are as passive during the inflammatory process. Briefly, for him as for Cohnheim, the pus-cell is but a displaced, extravasated leucocyte.

In a note by the same author, presented to the *Académie de Médecine* ("Sur le Mecanisme de la Suppuration," 'Bulletin de l'Acad. de Méd.,' 1870, p. 72; 'Gaz. Méd.,' 1870, p. 91), the results of observations on the migration of leucocytes in pericarditis, endocarditis, myositis, and fistula in ano are published; and M. Vulpian, who presented the paper, adds cases of sub-acute cystitis in a dog, erysipelas of the mucous membrane, chronic bronchitis, suppurating wounds, and the eruption following friction with croton oil, and that of variola, &c. In all these cases the leucocytes were seen to surround the vessels in great numbers, becoming more rare as the latter were departed from. In variola, the pustules of which are seated in the Malpighian layer, as well as in the vesicles produced by croton oil, the leucocytes were accumulated in the same way round the vascular loops of the papilla, and might be observed passing across the cell-wall, or filling up the *stomata* of the vessels (M. Vulpian has seen pus formed in this way in nine hours).

In opposition to these observers Feltz ('Gaz. Méd. de Paris,' 1870, p. 373, "Expérience sur les phénomènes dont les globules blancs du sang et les parois des capillaires sont le siége pendant l'inflammation") supports the view of Robin. His experiments were made on peritoneum inflamed by the introduction of foreign bodies into the abdominal cavity. By the employment of a solution of nitrate of silver (1 gramme to 1000 grammes water) the contours of the pavement epithelial cells could be coloured, remaining so for some hours at least, but he could not discover the stomata described by Recklinghausen on the diaphragmatic peritoneum. He allows that the presence of fusiform corpuscles, as described by His, can be made out in the cornea of healthy rabbits; and in an inflamed cornea, after some hours of inflammation, he has seen these corpuscles swell, become twice and thrice their normal size, their processes undergoing the same change, their contents being transparent and finely granular, with sometimes one or more nuclei. After a longer time, two to eight days, the contents of the dilated corpuscles become segmented, and take on a form resembling that of leucocytes. Should the process be only slightly active, the hypertrophied corpuscles may undergo a true colloid degeneration. He has

never seen, properly speaking, the proliferating division or splitting of the nuclei. According to him, the generation of the new elements takes place at the expense of the protoplasm or contents of the corpuscles, the nutrition of which has been altered by the disordered circulation; and to the thus disordered nutrition he gives the name "travail inflammatoire." He is not disinclined to admit that the contents of the hypertrophied corpuscles, having become free from some cause or other, may still take determinate forms.

Picot ('Gaz. Méd. de Paris,' 1870, p. 401; 'Journ. de Méd.,' &c., 1870, July, p. 38) made his experiments on the peritoneum of frogs, mice, and kittens, inflamed by contact with air alone, and denies the possibility of either Virchow's or Cohnheim's theories, and he considers with Robin that in suppuration of the peritoneum the formation of the leucocytes is a fact of genesis (génèse), since they appear upon the spot smaller than they are at a later stage, and go through their phases of evolution without arising from any preexisting anatomical element.

Samuel ("Die Modification des Widerstandfähigkeit," 'Centralbl.,' 1869, p. 306) scalded the ears in rabbits after tying the carotids, and his experiments show that while the ear of a healthy animal, kept in water at a heat of 50° R. for five minutes, undergoes a true inflammation, with all its characteristic symptoms, no traces of cloudiness or swelling are observed in the anæmic ear treated in the same way; but in the latter the following changes are pretty constantly found: there is slight injection of arteries and veins; the epidermis is easily rubbed off; the blood pressed out of the vessels returns very slowly. Twenty-four hours later the ear is ragged and darkly discoloured; the blood in its vessels is coagulated; the whole part is shrivelled, and after a time drops off. In tying only one carotid, the difference between the anæmic and the healthy ear in the same animal was not so marked as that between the ears in one animal thus operated upon, and another normal in every respect. Other experiments at lower and higher degrees of heat are given, and from the whole series, he asserts that the results agree with the changes in the blood circulation in inflammation, which, according to him, consist in a retardation of the blood-stream in the veins, going on to stasis, with slower but uninterrupted flow in the artery.

Tschaussow ("Entzündung bei der Unterbindung der Arterien," 'Centralbl.,' 1869, p. 801), working in Recklinghausen's laboratory, confirms generally Samuel's researches ('Virchow's Archiv,' xl, p. 213), but differs from him in considering the first change after rubbing the ear with croton oil, with or without ligature of the carotid, to be a contraction of the artery, less marked in the inflammation without ligature, and after the employment of feeble irritants; this contraction is succeeded by dilatation and secondary congestion, with which the exudation first occurs. He considers himself justified in concluding that the first change in inflammation takes place in the arteries, and that the appearances in the veins succeed them. The white "vesicles" described by Samuel consist, under the microscope, of fibrin with white, and a few red, blood-cells.

In the 'Quarterly Journ. of Microscopic Science,' July, 1870, p. 242, may be found a summary of work done by Stricker and other investiga-

tors with regard to inflammation ('Studien aus dem Institut für Experimentelle Pathologie in Wien, aus dem Jahre 1869,' Wien, 1870). In it Stricker asserts definitely that he has seen the division in inflammation of the corneal cells, and also of certain cells in the tongue of the frog; that pus-corpuscles take their origin from various sources, and not only from the blood-vessels; that the process of inflammation is accompanied by an increase in certain functions of the cellular elements involved in the process. He lays great stress upon exudation, which, he thinks, Virchow has underrated; and believes it to be doubly important, in that (1) the current acts as a mechanical stimulus; (2) the fluid of the blood has an influence as a material for nutrition. He declares that the phenomena of inflammation have the following succession, no one of the signs, taken by itself, being decisive:—Injury, disturbance of the circulation, exudation of fluid and formed elements, disturbance of nutrition, and new growth; that several structures, in consequence of the process of inflammation, are deprived of their functional ends, and reduced to a condition in which there is a tendency to procreation, *i. e.*, they become active, accumulate in masses, and divide either partially, wholly, or not at all.

As bearing more or less upon this subject, the following note may not be out of place here. Béchamp and Estor, from their further experiments on the properties and physiological *rôle* of the molecular granulations to which they give the name microzymes, conclude ('Gaz. Méd. de Paris,' 1870, p. 91):

1. The blood-cells are aggregations of microzymes.

2. These microzymes may appear as (*évoluer en*) beads, bacteria, bacteridia, &c.; as all those hitherto studied.

3. They behave like ferments.

4. The microzymes of the blood-globules give rise to cells resembling leucocytes, and other cells much smaller, more approaching globules; in all probability the blood-globule is organically the result of the action of these microzymes.

Béchamp and Estor have observed what may be called the analysis and synthesis of the blood-corpuscle; they have seen it resolve itself into microzymes, and thus have ascertained the formation of cells analogous to leucocytes, or red corpuscles in fluids containing only these same molecular granulations.

Other papers are:

Schklarewski, "Prof. Kolomon Balogh und die 'Auswanderung,'" 'Virch. Archiv,' xlvi, 116 (critique of the arguments advanced by Balogh against Cohnheim's statements, the insufficiency of which is shown); Samuel, "Ueber Entzündung und Brand," 'Centralbl.,' 1869, p. 832, and 'Virch. Arch.,' li, 41; ib., "Der Einfluss der Nerven auf Vollendung des Collateralkreislaufs," 'Centralbl.,' 1869, p. 385; Hayem, "Note sur les phénomènes consecutifs à la stasis veineuse, &c.," 'Gaz. Méd. de Paris,' pp. 195, 255; Chalvet, "Physiologie pathologique de l'inflammation" ("Thesis," abstracted in 'Arch. Gén. de Méd.,' 1869, ii, 451); Woodward, "Report on certain Points connected with the Histology of Minute Blood-vessels," 'Quart. Journ. of Micro. Sci.,' 1870, Oct., p. 380; Stricker and Sanderson, "On a New Method of Studying the Capillary Circulation in Mammals," ib., p. 362; Caton,* "Contribution to the Cell-migration Theory,"

* Caton found that migration did not take place in the mesentery of frogs while in

'Journ. of Anat. and Phys.,' v. 37; Lankester (E. R.), "On some Migrations of Cells" (wider than the subject of inflammation), 'Quart. Journ. of Micro. Sci.,' 1870, p. 265.

Inoculability of Tubercle.—Tuberculosis.

It would be absurd to attempt, at any rate at present, to draw any conclusions from the numerous experiments, still proceeding, as to the contagion and specific nature of tubercle; it will be seen, from the following abstracts that, however differently the facts may be interpreted, they still present, in detail, great agreement. Besides this a large element of confusion exists in the use of the word "tubercle," by many of the observers, alike for true miliary granulations and for cheesy deposits (degenerations).

Cohnheim's and Fränkel's conclusions from their experiments ('Virchow's Archiv,' xlv, p. 216) differ materially from Villemin's, but agree in most particulars with those of Sanderson and Fox. They made use of guinea-pigs, which are not so subject, at least in Berlin, to parasitic growths in the liver and lungs; and into their peritoneal cavity they introduced the inoculating substances, afterwards sewing up the wound. The greater number of the animals so operated upon died of peritonitis; the rest survived the operation, and served for further researches. To prove first the identity of miliary tuberculosis in man and these animals, they inoculated the latter with small pieces of lung, containing miliary tubercles, from the body of a man who had died of general tuberculosis. The only one that survived the operation died thirty-three days after inoculation, and showed at the autopsy (which is given in full) a very thick and rich eruption of fine miliary tubercles in peritoneum, liver, spleen, pleura, lungs, and choroid—in short, the exact picture of general miliary tuberculosis, agreeing in every respect, to the naked eye and microscopically, with that occurring in man. They had been at the pains to observe that in all the guinea-pigs they had killed, and even in those which had been operated upon and which had died soon after, the organs were intact. The next question they set themselves to answer was whether this artificial tuberculosis owed its existence to a specific virus; and, after inoculating other guinea-pigs with cancer, condylomata, sarcoma, and healthy tissue, as well as with gutta-percha, charpie, &c., they found the same results as in the first experiments. In all there was at the place of introduction of the foreign body a circumscribed abscess, enclosed in a richly vascular capsule, from the size of a hazel nut to that of an apple, with inodorous, white, viscid contents, showing under the microscope highly refracting shining nuclei with lively molecular movements, and shrivelled and degenerated pus-cells. To prove that these degenerated elements were the cause of the tuberculosis, they injected into the jugular vein of two other guinea-pigs a liquid consisting of cheesy pus from a capsule and axillary abscess of an artificially inoculated animal, in a solution of salt and water; and in both after death was found a miliary tuberculosis, less extensive than in

the hibernating state, but did occur in strong healthy animals operated upon late in the spring. Apparently, also, the process does not take place in the fish.

the animals inoculated by the abdomen. But as this occurred in guinea-pigs even after a simple injection, the experimenters injected dogs, in which simple injection has no such effect, with the same fluid, and with the same tuberculous result; and they conclude that the degenerated and cheesy pus is the origin of the infection.

Bernhardt ('Beiträge zur Lehre von der specifischen Natur der Tuberculose und ihrer Uebertragbarkeit von Menschen;' 'Deutsches Arch. f. klin. Med.,' v. s. 568) concludes, from a large number of experiments made on rabbits and guinea-pigs:

1. By the introduction of cheesy matter taken from the bodies of phthisical patients, under the skin, and especially into the peritoneal cavity of rabbits, cheesy processes as well as general tuberculosis may be excited with tolerable certainty.

2. By the inoculation in rabbits of indifferent foreign bodies, miliary eruptions were produced only in exceptional cases, and to a very small extent.

3. The same result was found in guinea-pigs; but it must not be forgotten that in them tuberculosis may occur even after a simple punctured wound.

4. Inoculation of cheesy matter taken from rabbits in which tuberculosis had been artificially produced, in Experiment 1, and from the deposits at the point of inoculation, caused, with tolerable certainty, a fresh outbreak of general tuberculosis.

5. Disinfection of the inoculable substances from tubercular men, as well as from tuberculous rabbits, weakened *in a high degree* the activity of the infection; so that after a time of varying length a limited eruption was produced, causing a very marked difference between the inoculations practised under (1) and (4).

As to whether it may be possible to follow out this last suggestion, and, by means of the inhalation of disinfecting substances, to lessen the active infection of the cheesy masses in phthisical lungs, the author promises further experiments and more accurate clinical observations.

Aufrecht ("Ueber die Structur des Miliartuberkels," 'Centralbl.,' 1869, p. 433), following up Chauveau's experiments, fed twenty-two rabbits on portions of human tissue. Of four fed on pieces of lung in a state of cheesy broncho-pneumonia, one died after three days; the stomach presented two small tumours, with hæmorrhage into the serous membrane covering them, and over the left half of the diaphragm, the left abdominal walls, &c., were numerous small, whitish knots, here and there disposed in the form of a ring. Under the microscope the latter was found to consist of a tolerably broad zone composed of small cells, and a cloudy centre containing numerous opaque granules and oil-cells; the centre separated from the zone by a clear, streaked ring; the granular centre Aufrecht considers to be the polygonal lining of a lymphatic, which has undergone the fatty change, and the surrounding zone of cells to be tubercle. He shows that the same structure and relation to lymphatics is found in the peritoneal tubercle in man; and he concludes (1) that miliary tuberculosis (of the peritoneum) is anatomically a perilymphangeitis occurring in the form of small aggregations of cells; and

(2) that the lymphatic lining (endothelium) takes no share in the formation of the new cells lying in the surrounding zone of tubercle.

Chauveau ('Lyon Médical,' iv, 1870, p. 321) gives further researches. In the first series of experiments three heifers were fed upon portions of tubercular lung from a cow; the first sickened in five weeks, with cough, characteristic cachexia, and glandular tuberculization; the latter observed to increase during life, and proved at the autopsy by the fact that the tubercular mesenteric glands weighed 1600 gr. The larynx, trachea, and lungs presented the characteristic lesions. The second heifer was ill a month, and the third twenty days, after the inoculation. The second had such marked ganglionic enlargement as to cause wheezing from the pressure on the trachea. Both presented otherwise the same lesions as the first. A fourth heifer, not inoculated, was well at the time of this communication. Three other series of experiments were made of from two to four beasts each; one series infected with human tubercle. The results were the same, differing only in the rapidity of the infection and the intensity of the pathological lesions, the experimenter varying as much as possible the age and nature of the subject, attempting even to produce tuberculosis in calves still sucking, whose ancestry was known, and whose father and mother are still living, without any signs of the affection produced in their offspring. He concludes that in the Bovidæ, on which alone he has experimented, he has evidence of contagion.

Saint-Cyr presented to the Societé des Sciences Médicales, April, 1870, the results of the following experiments:—On April 2 he fed a dog, born on Feb. 11, on a small quantity of tuberculous matter from a cow. Nothing having resulted, he gave it two grammes of the tubercular lung of an infant. On the 25th,—two dogs of the same litter being in perfect health,—the one experimented upon became very unwell; after death the intestine presented a number of patches, in the centre of which were small, indistinct white points; the liver, very remarkable points of the same kind; the spleen, four small granulations towards its inferior and posterior border; while the lungs were seriously damaged, showing hepatization of the two upper lobes and a portion of the middle and lower lobes, with, in the non-hepatized portions, ecchymoses, in the centre of which were seen greyish, transparent granulations. This was the second experiment of the kind made; in a first, made in February, the dog had been more saturated with the tuberculous matter, having taken six grammes at four times, on Feb. 20 and 26; he died three or four days after, and the lesions found were almost nil, consisting of old patches in the intestines, as in the last case, and two or three granulations in the lungs. The same quantity of tuberculous matter had been given to rabbits without any result. St: Cyr will not draw any conclusions without repeating the experiments.

Chatin ('Des effets produit sur des lapins par l'ingestion de substances tuberculeuses et cancéreuses prises sur l'homme,' 'Lyon Méd.,' iii, 1869, pp. 430, 457) (1) fed rabbits repeatedly on phthisical sputa, but found, like Dubuisson in guinea-pigs, no trace of tubercle after death. He quotes a note from Devillier and Lengler, who observed that fowls which fed, on their own accord, on the sputa of phthisical

patients, gradually became emaciated, and presented, after death, numerous tubercles in the lungs. As the birds died sometimes before the patients, these observers made use of the fact for diagnosis. (2) Chatin fed three rabbits on fragments of cheesy and tuberculous lung, and three others on cancer-substance from the liver and stomach of another patient; all the animals were killed two months after the last feeding. Of the three first, fed on tubercle, one was healthy in every respect; one, less fat, presented granulations in the lungs, liver, and kidneys, together with a lung-abscess; the third, very fat, two patches of agglomerated tubercular granulations over the pleura of one lung-lobe. Of the three fed on cancer, &c., one presented the same appearance as the last. The other two had tuberculosis of mesentery, liver, and kidneys, while the lungs were healthy. From these experiments he concludes that tuberculosis is not a specific disease, inasmuch as identical lesions are set up by the two different products, tubercle and cancer. The paper concludes with a list of animals in whom spontaneous (*i. e.* not artificial) tuberculosis is or is not common. It was read before the Societé des Sciences Médicales, and M. Tripier, who had examined microscopically the patches found in the two animals, asserted that they were identical with the alterations found in chronic inflammation, neither specific nor infectious (pyæmic), and Sanderson, who saw them, agreed with him. He added that the experiments made by him in combination with M. Arlong, as to the transmission of cancer to animals, had given only negative results. In two dogs inoculated with matter from a mammary (fibrous) carcinoma, a number of small granulations in the kidneys were not considered cancerous, but due to inflammation. In answer to M. Mayet as to animals subject to spontaneous tuberculosis, M. Saint-Cyr said that tuberculous phthisis was common in the Bovidæ, more so in cows than in oxen, frequent after eight years of age, but not found under two years, and more frequent in some countries than in others. Saint-Cyr does not recognise true tubercle in the horse, but looks upon the published cases as being probably glanders; it is very rare in dogs, in which, on the other hand, cancer is often met with; and rare in rabbits and sheep.

In regard to the assumed non-identity of tubercle and cancer in the last paper, it may be well to refer here to a memoir of M. Burdet, read before the Academy of Medicine ('Gaz. Méd. de Paris,' 1869, p. 204) in which he holds that an enormous majority of phthisical patients are born of parents affected with cancer (*Cf.* in report on this note, M. Vigla, ib., 1870, p. 283).

The experiments of Dubuisson ('Gaz. Méd. de Paris,' 1869, p. 442) on rabbits, dogs, and guinea pigs, which had been fed upon tuberculous substances, or inoculated with various tuberculous and cancerous matters, lead him to the following conclusions:

1. The matters inoculated are, as a rule, harmless, the nature of the products employed not influencing the result.

2. They sometimes produce rapid symptoms, with death by a sort of poisoning (septicæmia?).

3. In some cases lobular pneumonias are produced, which are perhaps consecutive to the inoculation, and may be confounded with the tubercles.

4. Tuberculous matters given as food sometimes cause the death of the animal by a sort of septic poisoning.

5. Generally the animals fed on tuberculous lung suffer from a malaise, which is the result of this bad food (mauvaise alimentation), but do not become tuberculous.

He holds, therefore, that for the animals experimented upon, tuberculosis is not essentially either infectious or contagious.

A paper was read before the Belgian Royal Academy of Medicine, Feb. 26, 1870 (see 'Bulletin de l'Acad. Med.,' 1870, iv, 110), on "Observations relative to the infection and contagion of tubercular phthisis." The authors, Degive and Van Hertsen, had repeatedly noticed the presence of tubercles in the uterine mucous membrane and the udders of cows affected with tuberculosis; they believe that they are right in inferring that the venereal excitement, always so lively, and sometimes persistent in this affection, results probably from the uterine lesion, and that the latter may cause hereditary transmission by a true contagion from the mother to the fœtus. The well-authenticated existence, by themselves and other writers, of this tuberculosis in calves only a few weeks old, tends to confirm their hypothesis. Again, it appeared to them that the milk secreted by the tuberculous udder ought to be infectious, and consequently capable of communicating phthisis to nurse-children, and to persons who took it without previously boiling it: and they intend to carry out further experiments on the questions, whether

1. Mammary tubercles are transmissible;

2. Milk expressed from a tuberculous udder possesses poisonous properties;

3. Tubercular matters are transmissible by the generative canals.

From the human as well as from the animal point of view, the last hypothesis is interesting, since it is known that in the female as in the cow, the uterine mucous membrane may be the seat of tubercles. [In the course of the discussion which followed, M. Crocq said that it had occurred to him that the tubercles often developed in the lower portion of the small intestine and ileum, might be due to the sputa which the patient had swallowed; but experiments he had made upon a dog fed upon a demilitre of these sputa every day for two months, had led to no results.]

Parrot ('Gaz. Méd. de Paris,' 1869, p. 249) fed a guinea pig on tuberculous matters, and it succumbed to a general tuberculosis.

Villemin, in a memoir ("De la Propagation de la Phthisie," see 'Archives Gén. de Méd.,' 1869, i, 625) presented to the Academy of Sciences, April 13th, 1869, gives the results of different series of experiments on the inoculation, by hypodermic injection, or by the introduction of a thread soaked in the matters employed; (1) Of the liquid matters expectorated by phthisical patients: (2) Of their dried sputa; (3) Of their sweat; (4) Of their sputa. Except in the case of the sweat, the experiments made with which are few and negative, he succeeded generally in developing phthisis in rabbits, and he concludes that (1) tubercle and phthisical sputa behave as poisonous substances, reproducing phthisis by inoculation, and by absorption through the natural channels of

digestion and respiration; the sputa not losing this property, even though employed several hours after rejection and dried; (2) phthisis is transmissible; its production can and must take place by means of the emanations from patients.

Verga and Biffi ("Sulla inoculabilità della tubercolosi," 'Gaz. Med. Lombard.,' 1869, p. 21) publish experiments which may be divided into two series; the first, in which the animals were inoculated with grey tubercle; the second, in which other morbid products were used.

(1) A number of rabbits were inoculated with grey tubercle; most died in consequence of the operation. Four died after from eight to ten days, wasted in spite of good nourishment, anæmic, and with distinct increase of white blood-cells; in two of them were found superficial ecchymoses in the lungs; in one œdema of the subcutaneous tissue of the abdominal wall. The matters introduced under the skin at the base of one ear, and at the inguinal region, were found but little altered. Seven of the survivors were killed after from two to five months; they also were emaciated. Their viscera were healthy, except the lungs, which contained deposits of tubercle, in three in the right apex, in two in the left, and in the remaining two on both sides, just under the pleura and at the obtuse margin. The tubercles showed no tendency to softening.

(2) Inoculation with the broken down tissue from the cavities of tuberculous lungs gave the same results, with the addition, in two of the rabbits used for the series, and killed one after six, the other after nine months, of enlargement and hardness of the mesenteric glands.

Facts worth observing in these experiments are—the emaciation and anæmia, with increase of the white blood-cells, without any pathological changes in the lungs; and the rare implication of the mesenteric glands in spite of the inoculation in the inguinal region.

No pathological changes were found in the offspring of inoculated rabbits, killed, perhaps, too soon. Eight cats operated upon in the same way remained lively and healthy, and were killed, some after two, others after three months, and one after two years; in two only were found ecchymoses in the lungs, in none a trace of tubercle. The matters inoculated were found enclosed in a thick-walled cyst of connective tissue; they had only partly undergone fatty degeneration, and even in the cats which had lived some months after the operation, were still recognisable. Experiments on four fowls and twelve frogs gave negative results.

In a further paper ("Ulteriori richerche sulla tubercolosi," same journal, 1870, p. 82) the same authors give four other series of experiments:

(1) Cinnabar, chloride of lime, glycerine were injected, as in the former experiments, in six rabbits; three were killed after three months and the rest after five; all were perfectly healthy, without a trace of tubercle.

(2) Eight rabbits were inoculated by the injection of the fluids of gangrenous, cheesy glands, epithelial and medullary cancers. The animals, killed after eight months, showed only a few pulmonary ecchymoses and cheesy peribronchitis.

(3) Bits of tow, purulent matter, and fragments of medullary cancer

were introduced into the peritoneal cavity of six rabbits, and again no trace of tubercle was found.

(4) A repetition of their earlier experiments, injection of grey tubercle dissolved in water into the cervical and inguinal regions, was made on six rabbits. Three were killed after five months, and the others after six, and in all the lungs were crammed with grey tubercles.

Some further experiments on cats, mainly with negative results, are given, and others on fowls fed on the sputa of phthisical patients, which are opposed to the views of Devillier and Lengler.

They conclude that,

(1) The propagation of tuberculosis from man to the rabbit, by the inoculation of grey tubercle, is a fact not to be denied; such propagation shows itself ordinarily, in the rabbit, in both lungs, and in some cases in the liver.

(2) The inoculation of heterogeneous substances, or the introduction into the abdominal cavity of foreign bodies or morbid products, whether in rabbits or cats, may set up a local irritation, but no true tuberculosis; a pulmonary, not a general tuberculosis.

(3) Tubercle is *not* propagated from man to the cat, nor, even more certainly, from man to fowls.

Tuberculosis?

Scherenberg ('Virch. Archiv,' xlvii, s. 311) gives the antopsy of a woman, æt. 56, in whom were found recent adherent peritonitis; partial obliteration of the gall-bladder, which contained muco-purulent fluid and cheesy masses, thickened bile-ducts, old and fresh basilar meningitis, and internal hydrocephalus, and "metastatic" deposits in the apices of the lungs. According to Scherenberg we have here a repetition of Cohnheim's and Fränkel's experiments, the original peritonitis, with cheesy products, exciting the other metastatic inflammations, as those authors had found; there was here also no true tuberculosis, the liability to which requires some natural disposition.

Doerfler ('Deut. Archiv,' vii, s. 146) gives the history and autopsy of a female, æt. 42, who during life had presented no great rise in temperature, and who died with cerebral symptoms. The post-mortem examination showed extensive basilar meningitis, with tubercles in the Sylvian fissures and immediate neighbourhood, increased fluid in the lateral ventricles, small cheesy deposits, and numerous miliary tubercles in both lungs. No enlargement or cheesiness of either bronchial or abdominal glands, and a cavity in the fourth right rib-cartilage, containing thick, almost cheesy pus. This last chronic chondritis Doerfler looks upon as the starting-point of the miliary tuberculosis, of which there had been no marked symptoms during life.

Béhier records ('Gaz. des Hôp.,' 1870, p. 397) the occurrence, attended with difficulty in diagnosis, of "pulmonary and glandular tuberculosis" (?), in a blacksmith, æt. 41, who had been perfectly healthy up to Feb., 1869, in spite of having been employed for two years and a half in a smithy at the Isthmus of Suez; then suffered from cough, with yellowish expectoration, rapid emaciation, alternations of diarrhœa and constipa-

tion. For six months before his admission to the Hôtel Dieu his voice had lost its timbre. In Feb. 1870, there appeared a swelling of the glands in the left supra-clavicular space. They were perfectly indolent, and more or less movable; none were found elsewhere, except a few small ones in the axillary region, chiefly on the right side. There was no change in tonsils or thyroid, no enlarged glands to be felt in abdomen; liver and spleen was both enlarged; there was no increase in white blood-cells. Béhier considers it a case, by no means common, in which considerable development, *tuberculosis*, and cheesiness of the cervical glands, was found in an adult, in whom the autopsy, agreeing with the diagnosis, revealed miliary tubercles in cheesy transformation in the lungs and pleura, tuberculosis of the mediastinal glands, tubercular ulceration of the vocal cords and of the intestines.

A case is published (ib. p. 401) of a stable-helper, æt. 58, admitted under Lancereaux into the Hôtel Dieu, June 22nd, 1870. Well up to the 20th, he was found, on the following morning, lying in his stable. After admission there was delirium, more or less violent, from time to time; carphology; respiration accompanied with movements like those of a man smoking a pipe; no abnormal sounds in lungs. On the fourth day of his stay there was opisthotonos; contraction of the jaw; diaphragmatic breathing; hyperæsthesia of left arm and leg, with contraction of the former; diminished sensibility of right half of body; then paralysis of movement on left, and of sensation on right side; no vomiting; death on eleventh day. The post-mortem examination showed thin skull-wall; abundant cerebro-spinal fluid; meninges opaque and thickened; vivid injection at base and Sylvian fissures; fine miliary granulations. The pons for about four square centimetres, seemed to be the seat of encephalitis, being injected and slightly softened, with points of hæmorrhage. A like appearance was met with behind the right fissure of Sylvius, where it occupied the thickness of the convolutions. The lungs were pigmented and congested, with disseminated, not numerous, tubercular granulations. Nothing very noteworthy about the other organs.

Contagion and Infection.

Sanderson's paper ('Rep. Med. Off. Privy Council,' 1869, p. 229) contains an account of Chauveau's, Beale's, and his own researches into the nature and action of the vaccine-lymph, and the experiments of the first-named with the poison of smallpox, sheep-pox, and farcy. After objecting to any chemical explanation of the phenomena of contagion—firstly, that the multiplication of contagium in the body is a process which cannot be compared to any brought about by chemical agencies, independently of organic development; and, secondly, that all contagia possess the power of retaining their influence for long periods, often resisting the most unfavourable chemical and physical conditions, and showing themselves to be what they are only after contact with living organism—the writer reviews at length Hallier's observations on the origin and development of micrococcus (microzyme), more especially in cholera and sheep-pox, and draws the following conclusions:

Every kind of contagium consists of [extremely minute, living] particles.

The contagium-particles (micrococci, microzymæ, microzymes) are spheroidal, transparent, of gelatinous consistence, of density equal to that of the animal fluids in which they float, mainly but not exclusively composed of albuminous matter.

The conditions of their origin and growth point to the fungi, probably not of the same species:—"All microzymes are not contagium-particles, yet all contagium-particles may be microzymes."

Two views are held as to the origin of these bodies: "According to one they naturally exist as particles of living tissue, and these take part not only in the morbid processes, but in the performance of the normal functions. According to the other they are originally morbid, and are imported into the body from without, being derived either from the tissues or organs of other infected individuals, or produced by the transformation of the contents of the reproductive cells of the parasitic fungi inhabiting the higher plants."

Before accepting or rejecting either of these theories, the following questions must be investigated: "(*a*) Is it true that the destructive parasites which inhabit the tissues of many of our common plants produce microzymes by a normal process of development? (*b*) Are such microzymes respectively endowed with distinctive morbific properties? (*c*) Is it true that microzymes take part in any of the normal chemical functions, especially those which relate to the transformation of the albuminous compounds? (*d*) Can they arise *de novo* in living tissues in mere consequence of impaired activity of nutrition?"

Durand ("Quelques reflexions sur le rôle des Infusoires dans les fermentations et dans la formation de maladies," 'Gaz. des Hôp.,' 1869, pp. 27, 41) does not look upon microphytes and microzoaires as the principal agents in the phenomena of fermentation and contagion, but considers that there is greater simplicity and less hypothesis in his theory that the great agent is electricity, which causes decomposition in organic bodies with the greatest ease, and is, again, developed from that decomposition.

Chauveau ("Isolement des corpuscles solides qui constituent les agents spécifiques des humeurs virulentes," 'Compt. Rend.,' t. 68, p. 829) took 10 cc. of pus from the lung of a glandered horse, mixed it at once with 200 grammes of pure water, and after shaking, allowed it to stand for two hours; he then decanted off the supernatant fluid, filtered and subjected the residue to repeated washings, the whole operation taking up thirty-nine hours. By these means he believed that he isolated the corpuscular elements of the poison of glanders. The last residue was mixed with a small quantity of distilled water, and injected under the skin of the cheek in a horse and a donkey, which four days afterwards presented all the symptoms of glanders. He concludes from his experiments that not only may the real poisonous elements be washed without losing their specific properties, but their prolonged sojourn in water does not succeed in communicating the poison to that fluid; and that this fact, in full accordance with his former researches on the inactivity of the plasma, proves definitely the mutual independence of the poisonous agents and their vehicles.

The experiments of Cavagnis, carried on under the direction of Mantegazza ("Sulla materia organica esalata dai polmoni," 'Gaz. Med. Ital. Lomb.,' 1869, p. 206), give the following results:

The expired air of healthy and unhealthy human beings contains a very small quantity of organic matter, soluble in water, which decomposes permanganate of potash, and blackens concentrated sulphuric acid. By means of a test solution of the former the amount of organic matter in the expired air may be measured; it varies from one hour to another in the same individual without any known reason. The expired air of several healthy men, of one affected with typhus, one with tuberculosis in the third stage, and one with intermittent fever, contained neither bacteria, vibriones, or any other organised bodies. The quantity of organic matter was increased in febrile diseases. The water in which the expired air was dissolved became rapidly putrescent, and swarmed with bacteria, fungi (low forms), &c. Water containing expired air was injected into the blood of rabbits without any result, whether used before or after it had become putrid.

Cavagnis differs from the later observations of Lemaire on the presence of infusoria, which come, according to the latter, from the mouth; no such organisms appear in freshly expired air; and even after repeatedly washing out the mouth with tartaric acid, or permanganate of potash, the breath still contains the organic matter, the chemical nature of which is as yet unknown.

Chauffard ('Bull. de l'Acad. Imp. de Méd.,' 1869, p. 62) gives a report on Bailly's memoir on an epidemic of catarrhal fever, pneumonia, and epidemic miliaria (Suette, Schweissfriesel), occurring in the village of Bains, in 1866. In fifteen days, in a population of 2500, Bailly had been called to see fifty-one patients whose illness commenced, in the midst of perfect health, with rigors, vomiting, stitch, and headache. He thinks it only rational to recognise but one morbid infectious agent as the cause of these disorders,—a catarrhal ferment or miasm—which should place them among the true infectious diseases, typhus, scarlet fever, measles, &c.; and to establish the connection between the catarrhal and infectious maladies he finds the common seat of both in the epithelial tissue. He would make use of the term "epithelial fever," to describe that constitutional, infectious, epidemic disease, which comprehends the various kinds of fever, whether exanthematic, catarrhal, mucous, arthritic, serous, miliary (suettique), pneumonic, erysipelatous, &c. He thinks that the three kinds of epithelium, mucous, cutaneous, and serous, correspond respectively to the catarrhal and mucous fevers; the exanthematic; and the arthritic, peritoneal, and meningeal fevers. The reporters, though differing from the author, commend his work.

Doutrelepont ("Versuche über die Uebertragung der Carcinome von Thier auf Thier," 'Virch. Archiv,' xlv, 501) gives the results of several experiments,* in which he made use of portions of freshly extirpated cancer from the mamma of a setter bitch. The pieces were intro-

* The following is a brief summary of earlier experiments recounted by Dontrelepont:—
1. Langenbeck. Injection into a dog's femoral vein from cancer of the humerus

duced into the peritoneal cavity of a young greyhound, a terrier a year old, and a grey rabbit; into the thigh-muscles of a white rabbit and a dog of a month old; and into the subcutaneous tissue of the neck of two guinea-pigs. Of the three dogs, the autopsy of the first, six and a half weeks after, showed embolia of the liver and kidneys, but nothing like cancer; the second died in consequence of the operation; the third gave negative results. The first rabbit died of pyæmia, the second of peritonitis. In both guinea-pigs the wound healed, and the organs of one were found after death perfectly healthy. The second was supposed to have been stolen by a cat before the autopsy could be made. The original bitch was inoculated in the muscles of the thigh with a portion of her own cancer, and died two days afterwards; no secondary growths were found, and though the lymph glands supplied from the diseased mamma were swollen and cheesy, the author does not state that they were cancerous. In commenting on these results, in the main negative, he calls attention to the great frequency of cancerous and other tumours in cats, dogs, rabbits, &c. &c., and refers to the striking case of "die Weber'sche Katze" ('Virch. Archiv,' xxix, 187), which died during the operation of inoculation, and was found to have already cancer of the liver and spleen. It may be noticed that, as in Cohnheim's and Fränkel's experiments, the pieces of cancer introduced into the peritoneal cavity became surrounded by a capsule.

According to Pasteur ("Resultats des observation faites sur la maladie des morts-flats, soit hereditaire, soit accidentelle," 'Compt. Rend.,' lxviii, p. 1229) the affection called by this name, or that of *la flâcherie*, is caused by a fermentation of the mulberry-leaf in the intestinal canal of the silkworm, which may be the consequence of the presence there of two distinct organised ferments, either vibrios or small beaded bodies, the two occurring singly or together. If the first are present the caterpillars almost always die before spinning their cocoon, seldom in the chrysalis state: and very rarely indeed are vibrios found in the moth. Should the other ferment be the cause of disease, the full development is not arrested, and the moth lays her eggs, but the cater-

similar cancerous masses found in the lungs two months later. 2. Follin and Lebert. Injection into a dog's jugular vein from cancer of breast; death in a fortnight; cancerous nodules in heart and liver. 3. Weber. Injection into femoral vein of a terrier from medullary cancer of maxilla, and inoculation from the same under the skin; a tumour formed at the latter spot, and on removal showed cancerous structure, but it afterwards shrunk up, and the animal recovered. 4. Weber. Inoculation of epithelial cancer under the skin of a cat; on removal of the local growth which was developed, similar epithelial structures appeared, but the wound healed; when the cat died no internal disease, beyond œdema of the lungs, was found. Other experiments of Weber's were negative. 5, 6, 7. Goujon. Inoculation of medullary cancer under the skin of a rat; two months later numerous secondary growths of the same character, chiefly in the glands (apparently, one only was examined microscopically). Similar experiments on a guinea-pig, and similar local tumour and altered glands (both examined microscopically). Injection from a "cancerous tumour" into the femoral vein of a dog; local granulations, probably of non-cancerous nature; recovery in two months. 8. Billroth. Three cases of subcutaneous inoculation, and six of injection, into the veins of dogs; all negative. 9. Lebert and Wyss. Inoculation from a melanotic tumour in a rabbit; two months after small nodules round the scar, like tubercles of serous membranes, but containing pigment. No other tumour.

pillars from the last are affected. The disease is highly contagious, the dry dust from the silkworm nurseries, as well as the dejections of the animals, causing considerable mortality in a few days, the latter, whether fresh or dry, easily communicating the disease when healthy and unhealthy caterpillars are mingled. The same easy mode of contagion exists in the disease named *la pébrine*, either from direct contact of one worm with another, but most markedly through the excrementitious matters, which lose their action very rapidly, the contagious corpuscles being destroyed by drying in ordinary air. These corpuscles exist in the eggs as well.

Raybaud-Lange ("Sur la maladie des morts-flats et sur le moyen de la combattre," 'Compt. Rend.,' lxviii, p. 1275) concludes from repeated experiments that *la flâcherie* is generally occasioned by the deleterious action of the ammoniacal gases set free from the cells (des litières), under the influence of a warm electric temperature. If the caterpillars be placed under a bell-glass, with a cup of ammoniacal fluid beside them, they will become affected (mort-flat) at the end of an hour. Cleanliness, ventilation, vinegar thrown upon the floor and over the mulberry leaves, so as slightly to moisten them, make up the treatment recommended.

Mecklenburg ('Berl. Klin. Woch.,' 1869, p. 259) finds from his experiments that chlorine, methylic acid (Holzessig), and the carbolic acid of commerce, fail to make the vaccine-lymph ineffective.

Temperature and Fever.

After a general survey of the researches of others on temperatures taken in different diseases just before death, and the results of various experiments made by himself on animals, &c., Valentin ('Deut. Arch. f. Klin. Med.,' vi, 200) draws the following conclusions:—

1. The production of heat after death takes place in all bodies, though varying in individual cases.

2. As long as the production is relatively greater than the loss of heat, elevation of the temperature occurs after death: consequently either from, *a.* increased generation of heat; *b.* diminished loss of heat.

3. The production of heat after death originates mainly in the continuation of the vital heat-producing processes, even after the cessation of the heart's action. Increase in these processes, caused chiefly by nervous influence, causes also great post-mortem production of heat.

4. The rigor mortis, though a certain amount of heat may be set free by its development, is of only subordinate influence in elevation of the temperature.

5. Post-mortem decomposition has probably a considerable share in the production of heat after death.

6. The loss of heat is far less, under pretty much the same conditions, than during life. Consequently, post-mortem elevation of temperature is possible without any increase in heat-production.

Bäumler ('Brit. Med. Journ.,' 1869, ii, 207) records some experiments on the time necessary for the accurate scientific observation of the mercurial column when placed in the mouth, axilla, or rectum. Agree-

ing with Liebermeister, Wunderlich, &c., that the observation ought not to be considered complete till the mercury has remained stationary for five minutes, he gives the following as the time required for the three positions:—

Rectum	from 3 to 6	minutes.
Mouth (under tongue)	„ 9 to 11	„
Axilla	„ 11 to 24	„ (extreme cases excepted).

The variation, of course, depends on the fact that the two latter positions have to attain, so to speak, the fixity of temperature which the first naturally has, that of a closed cavity: this may, to some extent, be brought about by the closure of either mouth or axilla for some time, —ten to fifteen minutes before the introduction of the thermometer, the ball of which has been already warmed, so as not to abstract heat. [His remarks on heating the thermometer to a point beyond the temperature of the mouth, refer of course to a non-registering instrument.]

Finlayson ('Glasgow Med. Journ.,' 1869, p. 186, "On the normal temperature of children") gives fifteen tables of temperatures observed in as many children, and concludes that

1. The daily range of temperature is greater in the healthy child than that recorded in healthy adults, his observations giving a mean range of between 2° and 3° F.

2. There is invariably a fall of temperature in the evening, amounting to from 1° to 3°.

3. The most striking fall usually occurs between seven and nine p.m.

4. The minimum temperature seems usually to be reached at or before two a.m.

5. The temperature usually begins to rise between two and four a.m., while the child is still sleeping, and before food has been taken.

6. Fluctuations between nine a.m. and five p.m. are usually trifling.

7. There seems to be no very definite, or at least obvious, relation between the frequency of the pulse and respiration, and the amount of normal temperature.

It would be impossible to abstract with any justice a paper by Senator ("Beiträge zur Lehre von der Eigenwärme und dem Fieber," 'Virch. Archiv,' xlv, 351) on temperature in health and disease, especially on that of fever, containing the results of experiments on artificially heated animals, and tables of temperature. In the same journal (xlvi, 391) will be found remarks by Breuer on this paper, together with Senator's answer (ib., 507). The latter contributes a further paper (ib., l, 354) on the variations of temperature caused by cooling the surface of the body by free admission of air, sponging, &c., with comparisons of the temperature indicated by the thermometer in the axilla and rectum, and experiments, with full tables of observations, on a healthy adult.

Falch (ib., xlix, 457) publishes minute details, with curves of the temperature observed, of experiments on dogs and rabbits poisoned with phosphorus (five cases), strychnia, morphia, nicotine, &c.

Lewisky of Kasan (ib., xlvii, 352) records experiments on rabbits as to the effect of sulphate of quinine on the temperature and circulation: with tables of the former, and sphygmographic curves.

Quincke publishes several cases of excessively high death temperature in enteric fever, rheumatism, tubercular meningitis, &c. ('Berl. Klin. Wochensch.,' 1869, p. 301).

After giving a brief historical sketch of the question since Reil first noticed changes in the nails after febrile disturbances in 1792, Vogel ('Deut. Archiv,' vii, s. 332) describes his own observations made during the last three years. According to him the nails of the fingers and great toes, especially after typhus, but also after pneumonia, acute rheumatism, and measles, present the following changes: dulness of the natural lustre; a white, anæmic stripe over the lanula in several or all the fingers; transverse furrows and ridges; falling off of the nail. The furrows continue to be visible for nine or ten months after the illness, and when observed may be used as diagnostic signs of a former typhus.

Unruh ('Virch. Arch.,' lviii, s. 227) gives the results of the examination as to the excretion of nitrogen in febrile affections, undertaken in twenty-eight cases. The ages of the patients were between fifteen and forty-eight, the majority between twenty and thirty. There were nine cases of pneumonia, four of typhus (T. exanthematicus), three of enteric fever (ileotyphus), two of relapsing fever, two of syphilis, two of acute rheumatism, and one of trichinosis. The remainder were cases of local inflammation. The temperature of each case was taken once a day, and all the urine passed in twenty-four hours collected and analysed. From the tables given in the paper the following conclusions appear to result:

(1) The greatest excretion of nitrogen (measured by the addition of the amount calculated from the daily excretion of urea, uric acid, and creatinin) does not coincide with the highest temperature, especially when the latter occurred early in the fever.

(2) The amount of nitrogen is greater during the abatement of the pyrexia than at its height.

(3) In the case of ill-nourished patients, the excretion of nitrogen is usually very small, however high the temperature.

(4) On the average of the twenty-eight febrile cases, the excretion of nitrogen was half as much again as in health; in some of the cases it was twice as much.

(5) The increase of heat theoretically due to this amount of increased oxidation of nitrogen is not enough to account for the increment of temperature in each case separately.

(6) Uric acid is not excreted in increased quantity during pyrexia, unless there is also some obstruction to respiration.

Naunyn ("Ueber das Verhalten des Harnstoff-auscheidung beim Fieber," 'Berl. Klin. Wochenschr.,' 1869, p. 42) made experiments on dogs in confirmation of the views of Traube, Jachmann, Vogel, &c., as to the increased secretion of urea in fever in men. His first set of experiments having proved this, he proceeded to inquire whether the increased secretion of urea is primary, and the cause of the increased temperature, or whether the latter is the cause of the former; and from fresh experiments he concluded that the increased secretion of urea

(and other compounds containing nitrogen) occurred in consequence of the increase of temperature.

Thudichum ('Eleventh Rep. Med. Off. Priv. Counc.,' 1868, p. 126) states that in all febrile conditions, however caused, the following changes take place: (1) Temperature and (2) disintegration of albuminous substances are increased; (3) muscular power, (4) ingestion of nutriment, (5) amount of urine passed, (6) powers of senses and sensorium, are diminished. Under the first head he remarks that a temperature of 44° C. belongs to spinal injuries and tetanus; one of 43·37°—41·87° to the approach of death (especially in typhus); that no patient who has exceeded 41·75° in typhus has got well; that of cases which exceed 41·12° fifty per cent. die; 38·6° is the maximum, 37·6° the mean, and 36·76° the minimum of health; below 36·5° (the temperature of diarrhœa) all cholera cases die. Whenever the amount of tyrosine excreted in the urine is increased, that of urea is also, but the inverse statement does not hold.

Huppert and Riesell ('Arch. d. Heilk.,' x, 329) contribute a paper on the transformation of nitrogen in fever.

Hay-fever; Summer Catarrh.

In a paper by Binz, on the action of quinine ('Virch. Archiv,' xlvi, s. 100), may be found a history given by Helmholtz, who had suffered regularly from hay-fever since 1847, from the middle of May to the end of June. The connection between it and the time of its occurrence suggested to him that its origin was due to some organism, and during the last five years he has found regularly in his nasal secretion certain vibrio-like bodies, seen at no other period of the year. A drawing of them is given (l. c., p. 101). They are very small, generally single, ·004 of a millimètre in length, containing four corpuscles in a row, closely connected in pairs. On warming the stage of the microscope they exhibit lively movements; at a lower temperature they are very inactive. Left for several days in the moist chamber they vegetate, and appear somewhat larger and more distinct than immediately after expulsion. They occur only in the secretion got rid of by violent sneezing, consequently they probably occupy the sinuses. Having read Binz's researches on the poisonous action of quinine on infusoria, Helmholtz determined to try the remedy on himself, with the theory that, even supposing these vibrios were not the cause of the affection, they made it more annoying by their movements and the products of their decomposition. He made, therefore, a saturated neutral solution of sulphate of quinine (1 to 740), allowed 4 cc. of this to flow through a pipette into each nostril, and moved his head about till the fluid had penetrated in all directions. The result was perfectly successful, the symptoms disappearing after the use of the drug three times a day for several days, the vibrios also disappearing from the nasal secretion. He made the first trial of it in the summer of 1867. In 1868, as soon as the first symptoms showed themselves in May, he employed it again, and prevented their further development (Cf. Binz, "Ueber eine Unter-

suchung. von Helmholtz betreffs des sog. Heufiebers und dessen Heilung durch örtliche Anwendung von Chinin," 'Berl. Klin. Woch.,' 1868, p. 135).

Zoja and De-Giovanni ("Sopra la febbre del fieno e l'azione del solfato di chinino su alcuni infusori," 'Gaz. Med. Ital. Lombard.,' 1869, p. 307), in a critique on the above, deny the specific natnre of hay-fever, and object to consider it as a new pathological entity. They are convinced from their own experiments that quinine has no noxious action on vibrios, as asserted by Binz, and they consider that Helmholtz suffered from a malarious disorder, which ran its course, as it often does, with all the symptoms of a catarrhal affection, and which was, therefore, benefited by the use of quinine.

The most startling part of a paper by Ferber ("Der Niese Krampf und dessen Beziehung zur Migräne, zum Bronchial-asthma und zum Heufieber," 'Arch. der Heilk.,' 1869, p. 567) is the assumption of the author that asthma, migraine, and hay-fever (l. c., p. 586) are connected with a disturbance of the circulation within the pelvis, through dilatation of its venous system, causing the blood to accumulate in certain vessels—*e. g.* of the skin and mucous membrane of the nose, or of the lungs, and consequent reflex irritation of the vagus.

Intermittent Fever.

Blaxall ("On the protracted Epidemic of Fever at the Mauritius continuing since 1866," 'Lancet,' 1869, i, 307) narrates two visits of H.M.S. "Urgent" to the island. She arrived in July, 1867, and remained seven days in the Grand Harbour, 100 yards from the north-east, and 600 yards from the opposite, shore, and though the epidemic had been raging with frightful but, at that time, diminished, intensity on land, no case showed itself on board. The ship took up the same anchorage sixteen months later, in November, 1868, at the commencement of the hot weather, the fever being on the increase on shore. She stayed five days, and took on board the 32nd regiment, which had suffered considerably during its stay on the island. On the twelfth, fourteenth, and forty-eighth days after leaving, the ship being then off the south-east coast of Africa, three cases of intermittent appeared among the crew, the individuals attacked never having suffered from malarial disease before, and never having left the ship during her stay. The first two were of the quotidian, the last of the tertian type, all showing the irregularity characteristic of the epidemic in the Mauritius, which Blaxall considers to be of a mixed type, "from the co-operation of the essential causes of paludal and typhoid fevers."

Ritter ("Studien über Malaria-infection," 'Virch. Archiv,' xlvi, s. 316) gives an account of the epidemic in the Elbe marshes in 1868. Through the unusual heat of the summer, the ditches surrounding the fields were completely dried up, the mud at the bottom left to the direct action of the sun. The water of the Oste, the largest tributary of the Elbe in the marshes, was salt, and, from the difficulty of procuring good drinking water from the dried-up ground, the greater part of the

population, especially the working classes, had to use the salt water or the water from the ditches. At the latter end of July the first case of marsh fever occurred. The epidemic reached its highest at the beginning of September, and ceased abruptly at the beginning of October. With the exception of this epidemic, the average of disease was very low. The peculiarity of the epidemic was, that it occurred in different circumscribed localities in the author's practice. It showed itself on the shores of the Oste, and close to the outlet of the stream, where the water was most salt, and even here only in certain cases of the population. The greater part of the patients were the brickmakers, who had come over for the summer from the district of Lippe, and were consequently not acclimatised. Next in order were the men-servants, very few of the women, and those chiefly milkmaids, while the better classes and children did not suffer more than usual. A second peculiarity was, that infection followed very rapidly, like a sort of poisoning, in exceptional cases only with rigors and fever, generally with a completely cool skin, accompanied by symptoms of choleraic diarrhœa, with profuse exhausting stools, rapidly increasing anæmia, followed by enlargement of the spleen several days later. Ritter notices especially that the anæmia is not a result of the diarrhœa, but a "co-effect" of the malarious influence, and that the diarrhœa is to be looked upon not so much as a symptom of the malarial process as an expression of a local affection, "as the reaction of the whole intestinal canal against the presence of irritating matter." A third peculiarity was, that in the greater number of cases there was complete absence of fever, or but few symptoms of it, and an absence of intermissions; while in the cases of relapse, which much more rarely presented violent intestinal symptoms, the fever and the remittent character were more marked. The course of the affection was favourable, only one patient, a decrepid old man of seventy-six years dying.

Barat ("Etude sur la fièvre épidemique qui a régné en 1869 à l'ile de Réunion," 'Arch. de Méd. Navale,' 1870, xii, 422) records an epidemic of fever which broke out in February, 1869, in Réunion, and spread rapidly, not only among the marshes on the coast, but attacking the people inland on the mountains, at a height of 919 metres above the sea level. The island is a cone of basalt, the disturbance of which has produced a wall of abrupt mountains, surrounded at their base by a narrow border of plains furrowed by watercourses, which overflow during winter, and become stagnant in the dry season, interrupted by large ponds and pools, and girdled by shingles, which bar all the rivers and hinder the ready discharge of their waters without opposing the invasion of the sea. The mixed population of the affected communes was 23,000, many of them living in great misery; rich and poor were attacked alike, the Malgaches and Caffirs alone seeming to have a sort of immunity. Of those attacked, 4311 suffered between April 7th and July 31st, and 60 died. At the commencement of the epidemic the attacks were irregular, becoming longer as the periods of intermission became less marked, taking on a remittent quotidian, and then a pseudo-continuous type of fever. The quotidian were found in 89 per cent., the tertian in 3 per cent.; other types, as quartan, were met with, and

simple remittent and pseudo-continuous in only ·6 per cent. Relapses were very frequent, and the patients remained long under the influence of the malarial cachexia, pale, wasted, puffy, and without energy. Barat discusses at some length the question of the origin of the epidemic, and considers that if, according to the researches of Lemaire, Hammon, Morren, Salisbury, Van d. Corput, &c., the existence of organised bodies (germs, microphytes, &c.) is to be admitted, it is quite conceivable for a cyclone to have brought them to the island, where the idea is almost taken for granted, some going so far as to lay the blame of the importation of the *palmella** to the introduction into Bourbon of the *Pistia radiata*, which may have supported the fever-causing agent; at any rate, the telluric and atmospheric influences of the year were favourable to the hatching of germs, and the latter grew and multiplied with marvellous rapidity.

Pauli ("Zur Frage über subcutane Chininjection gegen Wechselfieber," 'Deut. Klin.,' 1869, p. 277) having treated 256 patients affected with ague with subcutaneous injection of quinine, in the course of an epidemic at Posen during March, April, May, and June, 1869, is convinced that the disease may be combated as successfully as by internal administration of the alkaloid, and with much smaller doses (even one third); but that though employed in this way it does not always prevent relapses. It is most certainly indicated in those cases in which internal treatment is impossible, in intermittent fevers of the pernicious type, which demands rapid action of the drug, and perhaps in very young children. In the same journal (1869, p. 474, "Wechselfieberstudien") he gives a short analysis and a few notes of cases occurring in the same epidemic. Of fifty-eight patients forty-five had tertian and thirteen quotidian symptoms; of the former, the paroxysms occurred thirty-one times in the forenoon, nine times in the afternoon, and five times in the night, in two of the last from shortening of the intermission; of the latter, seven times in the forenoon, twice in the afternoon, and four times in the night. The first attacks were preceded or accompanied by catarrh of the intestinal, and sometimes of the respiratory mucous membrane, and, in a third of the patients, herpes facialis was present. In several cases the disease took on a pernicious character, but terminated favourably.

Calvert ("Application de l'Acide Phénique au Traitement des Fièvres Intermittentes," 'Compt. Rend.,' 68, p. 191) gives some observations made at the Mauritius, under the direction of MM. Barraut and Jessier. The carbolic acid had been employed at first for the disinfection of the sewers and cesspools, and all sources of the poison. It was later in the epidemic administered in doses of 7 centigrammes in an ounce of water with a small quantity of brandy three times a day; and it was also employed in twenty-seven cases hypodermically in doses of 3—4 centigrammes in 20 drops of water; the attacks ceased immediately after the use of either means, and relapses were less frequent than after

* On this plant and its connection with ague cf. Salisbury "On the Cause of Intermittent Fevers, with investigations which tend to prove that these Affections are caused by certain species of Palmellæ" ('Amer. Journ. Med. Sci.,' 1866, li, 51). He finds also specific spores in gonorrhœa, syphilis, rheumatism, &c. (ibid., liv, 359; lv, 17, &c.).

treatment with quinine. Its magical effect was noticed especially in cases of attack preceded by vomiting. Barraut and Jessier consider that the results prove that intermittent fevers are due to the presence in the blood of microscopic animal or vegetable ferments, like those discovered by Pasteur.

Markey ('Lancet,' 1869, i, p. 671) does not speak favourably of the use of carbolic acid in ague; he gives, in full, four cases treated with the acid suspended in mucilage; five minims were given to ten convalescents from ague three times a day for six days; in three it had a slightly laxative effect; in two there was considerable irritability of stomach; in the remaining five there were no results. No change could be detected in the pulse, nor was the urine altered, either in colour or specific gravity.

Leavitt ("Hyposulphite of Soda in the Treatment of Malarial Fever," 'Amer. Journ. of Med. Sci.,' 1869, lvii, p. 39), who had used this drug before, gives shortly sixteen more cases, from which he attempts to draw the conclusion that it is not efficacious in patients depressed and weakened by constitutional diseases and want of red blood, and that its perfect success in cases other than these is due to a naturally strong and robust frame which seizes "upon the interim furnished, as it were, by the arrest of fermentation for the time being, the recuperative powers being so great as to repel any further septic invasion of the blood."

Little (ib., lix, p. 280) uses the hypo- and bi-sulphite of soda as a substitute for quinine in intermittent and remittent fevers in doses of 10—20 grains in a wineglass of water, every three or four hours; the salt being slightly laxative, there is no need of purgatives. The bi-sulphite is preferred.

Harris (ib., lviii, p. 588) gives a case, occurring in a lady of eighteen, of partial amaurosis, developed during the course of a long-continued intermittent fever, disappearing under the use of quinine, and reappearing with each relapse. She was very anæmic, and presented serous infiltration of the abdominal cavity and lower extremities. The ophthalmoscope showed slight congestion of the choroid of the right eye, and nothing abnormal in the left.

Willebrand ("Iod als Heilmittel gegen kalten Fieber," 'Virch. Arch.,' xlvii, s. 243), who had applied iodine internally in typhoid, and had further noticed its effect during a wide-spread epidemic of the same fever in 1868, gave it in cases of malarious fever, some of which, at the commencement, had all the symptoms of typhoid. He used the same mixture ("Iod gegen Typhus," 'Virch. Arch.,' xxxiii, p. 520), Iodine gr. vj; Potass. Iod., gr. xij, in aquæ destill. ʒj, giving five drops in a liqueur-glass of water every two hours (three drops to children aged four and two years, three to four to a child aged seven years). One of his colleagues gave, in several severe cases, ten to fifteen drops, and in one case twenty-five drops every two hours, without any ill consequences. Willebrand gives nineteen cases, in eighteen of which he used his iodine solution, and in one iodide of iron (gr. j ter die to a child aged twelve years). Of these eighteen cases, some more severe than others, the affection was arrested almost always after the second, in two

cases only after the fourth attack. The same treatment was employed in cases of intermittent fever during 1869, and in one case only of long-continued quartan fever, which had been treated before with large doses of quinine without effect, was recourse had to quinine as well as iodine. He concludes that iodine is preferable to quinine, in that it not only arrests the fever, but prevents the tendency to relapse—a result not generally gained by quinine. No ill effects were found, either among children or old people; and he claims that it should be considered a specific against the vomiting, &c., which occur in the severer forms of the malarious affection.

Mazzolini ("Sui risultati clinici ottenuti col solfito di magnesia nella febbre miasmatica," 'Gaz. Med. Ital. Lombard., 1869, p. 35) gives the treatment employed by Santini in 104 cases of malarious fever by magnesia sulphurosa. In eighteen only were there complete and rapid results; twenty recovered after its employment for seven to nineteen days; in thirty-three the salt caused a diminution of the fever, though quinine had to be given afterwards; in twenty-nine it had no effect, and in four it caused diarrhœa.

Casati ("Sull' azione febbrifuga della bussina," ib., p. 237) prescribed the sulphate of buxin (one gramme divided into six or eight doses, and given during the period of apyrexia) in forty-five cases, and obtained rapid results in thirty-seven. He lays great stress upon the rarity of relapse after its employment, and the smallness of its cost.

Durosiez ("Des lésions des valvules du cœur d'origine palustre," 'Journ. de Méd.,' 1870, p. 46) concludes that valvular lesions (of insufficiency or obstruction) may depend upon intermittent fever; that the latter may be often noted in the previous history of patients attacked with acute articular rheumatism; that an attack of intermittent fever may be sometimes observed in the course of this last disease, which, like dysentery, may be set up by the malarial poison; and that "rheumatism of the spleen" appears to produce intermittent fever.

Pernicious Malarial Fever.

In the 'American Journ. of Med. Sciences' (1870, lxix, p. 222) may be found an abstract of various reports, relating more especially to the "Hæmorrhagic Malarial Fever" of Alabama, and peculiar to the Southern States. It is described as a malignant malarial disease, following repeated attacks of intermittent fever, characterised by intense nausea and vomiting, a very rapid and complete jaundiced condition of the surface, as well as of most of the internal organs, an impacted gall-bladder, and hæmorrhage from the intestines. These phenomena occur in an almost uninterrupted connection, attended by remissions and exacerbations. Though formerly rare, it has lately become alarmingly prevalent, and its cause is generally considered to be "the almost entire neglect of drainage consequent on the changed condition of agricultural pursuits since the war." It has been variously called black jaundice, cachemia hæmorrhagica, malignant congestive fever, icterode pernicious fever, purpuræmia, yellow remittent, yellow disease, canebrake yellow fever, &c.

Lartigue ("Note sur la Fièvre bilieuse Hémorrhagique," 'Arch. de Méd. Nav.,' 1870, xiii, p. 428) gives a case occurring in a man æt. 45, who had been a great drinker, and had suffered repeatedly from intermittent attacks, at a naval station on the western coast of Africa, and makes some remarks on its differential diagnosis from yellow fever. The affection began in a very insidious manner, with gastric and bronchitic irritation, and prostration. After five days a deep icteric tinge and frequent vomiting appeared, the latter becoming bloody, accompanied by hæmorrhages from the buccal, intestinal, and nasal mucous membranes; throughout there was no hæmaturia. The patient died on the eleventh day from his first complaining of malaise. Among other differences between this disease and true yellow fever, Lartigue remarks the occurrence at the very onset of the adynamic state, without anything resembling the invasion-stage of yellow fever, and the disappearance, before death, of the icterus, which had set in early.

Borius ("Des injections hypodermiques de sulfate de Quinine dans le traitement des fièvres paludéenes graves de Sainte Marie de Madagascar," ib., 1869, xii, p. 241) employed the injection of quinine in five cases of remittent bilious ictero-hæmorrhagic fever, and one of pernicious fever with comatose and tetanic symptoms; one case only was fatal: the patient, a child under four years of age, seemed, on the tenth day of the disease, to be convalescent, but was attacked with gangrenous diphtheria of the nasal fossæ and pharynx, and died on the thirteenth day. He looks upon this mode of treatment as preferable in those cases of fever which are accompanied by severe gastric irritation, and in which the internal administration of quinine is contra-indicated. The solution he employed contained ·2 to ·45 grammes of the salt; and before injecting it he places the syringe in water with a temperature about the same as that of the patient, by which means he thinks the fluid is placed in conditions more favorable to absorption.

Yellow Fever.

It would be impossible to give a full abstract of a report by Donnet ("Statistical Report of the Health of the Navy for the year 1867," Appendix, No. ii, and translated in 'Arch. de Méd. Nav.,' 1870, xiv, p. 18) of the epidemic which prevailed in 1866-67 in the Naval Hospital at Port Royal, Jamaica, where yellow fever is only known when imported, and among the white population. No case had occurred for four years up to Nov. 27, 1866. The admissions from that date up to Dec. 31, 1867, were 72, of which 25 were fatal. The infection could be traced from a ship in Morant Bay to the Naval Hospital, from St. Thomas to the merchant shipping in Kingston, from these ships to Kingston itself, and from Kingston to each man-of-war except one that became infected, to the Naval Hospital and to the cantonment of Newcastle.

Da Silva ('Med. Times and Gaz.,' 1869, i, 119) gives further particulars as to the epidemic in the Cape Verde Islands in 1868. It was imported from Goree and St. Louis, appearing first at Bissan in July, the population of Praia in the Island of San Thiago being chiefly affected,

and spreading with such rapidity that in August 285 Europeans were received into hospital, of whom 41 had died by Sept. 1. It declined in October, but spread to the Isle of Brava.

Batby-Berquin ("Sur le développement de la récente epidémie de fievrè jaune à la Guadeloupe," 'Arch. de Méd. Nav.,' 1869, xii, p. 441) gives an account of the breaking out and spreading of the epidemic which appeared in Sept. 1868, the island having been free from it for twelve years; and concludes that it is very probable that it was not imported, but originated in the island.

The infectious character of this disease, and the influence of an infected locality, are well shown by the following ('Lancet,' 1869, ii, 583). Eight men and a serjeant of marines had been detached to cleanse the quarantine hospital at Port's Island, Bermuda. This work was interrupted by the arrival of the "Barracouta," with yellow fever on board, the sick being removed to the island, and the working party leaving. They resumed their work twenty-seven days after the return of the survivors of the sick to the vessel, and subsequently to the departure of the latter. About a week later the sergeant and one of the men were attacked, and died on Sept. 6th, and on the 12th a third, who recovered. This last, with the rest, including the assistant-surgeon who had had charge of them, were sent to Halifax in a ship of war, the surgeon dying later of the same disease.

Ballot ('Arch. de Méd. Nav.,' xiii, p. 54) gives an account of the epidemic in the Little Antilles, in 1851. No case had occurred at Martinique since 1844; in May 1850, a soldier was attacked and died, and in the course of October three others, of whom two died; no other cases appeared either in garrison or among the population. In December, several merchant ships from Cayenne, which had lost some of their crews by yellow fever, put into Fort-de-France, and their men affected were admitted into the hospital, two dying, the majority recovering. About the middle of January the ships left, no other person, civil or military, taking the disease. On the 30th August, a European female, who had been six months in the colony, had a well marked attack, and died; and from that time to the end of November, the disease became epidemic, ceasing till July 1859, and then breaking out again. Ballot concludes that this epidemic was not imported, but was spontaneous.

Gauldrée-Boileau ('Compt. Rend.,' 1869, lxix, p. 969) mentions a belief common among the people in Peru, that the outbreak of yellow fever is due, in part, to a modified condition of the atmosphere caused by gases set free by earthquakes.

Vidaillet ("De l'examen des Urines comme signe de diagnostic différentiel de la fièvre jaune," 'Arch. de Méd. Nav.,' 1869, xii, p. 57) attempts, by examination of the urine, to obtain a certain means of diagnosis between yellow, intermittent, and bilious remittent fevers. In the first the secretion is altered, diminished, and when death is imminent suppressed for thirty-six and sometimes seventy-two hours before it occurs. By degrees, as the urine is diminished, the urea and uric acid are also lessened, while with the decrease in the last the albumen, at first small in quantity, increases, the urea and uric acid, together with the bile-colouring matter, finally disappearing. If, twelve or twenty-

four hours after the invasion of the fever, a few drops of nitric acid are poured down the sides of a glass containing about 150 grammes of the urine, there is formed, almost immediately, or a few seconds afterwards, a whitish albuminoid zone, separating the fluid into two parts, the upper layer unchanged in colour, the lower one having become reddish, and, at its lowest part, more or less orange coloured. This zone, which he calls "the premonitory ring (anneau prémonitoire), is never seen in the other two diseases, and is diagnostic of the commencement of yellow fever. It varies in thickness, is soluble in excess of acid, or rather takes a greenish hue from below upwards. As the ring disappears, the urine becomes effervescent, the effervescence showing itself with the period of improvement, the pulse falling at the same time to 60, and the affection promising to terminate in recovery.

Corre ("Lésions observées dans la fièvre jaune," 'Gaz. des Hôp.,' 1869, p. 181) gives a table of the lesions found after death in seventy-six autopsies of yellow fever made at Vera-Cruz; the most noticeable phenomena, occurring in about half of the cases, were the lesions of the scrotum, which presented in eleven cases livid, and in three erysipelatous, patches; ecchymoses in eleven; ulcers in two; gangrene in four; scleroses in two; and œdematous infiltration in one. This affection of the scrotum had been pointed out first by Blaës and Cornilliac, the latter of whom, in his 'Studies of Yellow Fever at Martinique,' says that at the end of the third, fourth, or even fifth day of the invasion, the parts of the scrotum in contact with the thighs become very painful and secrete a serous moisture; in a short time the scrotum ulcerates, the epidermis falls off in patches, and leaves to view the vascular network of the skin of that part and of the perinæum, while an exudation takes place of a sero-sanguinolent fluid, which later becomes red. Noticed in other epidemics, these lesions, from simple erythema to gangrene, occurred in the majority of the yellow fever cases at Vera-Cruz in 1862.

Pellarin ('Arch. de Méd. Nav.,' xiii, p. 19) gives a long paper on the pathology and anatomy of yellow fever; and, among other conclusions, asserts that, though it is essentially a general disease, it is fatal only through the local affections developed in its course, notably that of the liver, which may be regarded as the principal centre of the disease, and the cause of several severe symptoms, as well as of secondary alterations in the blood and urine. He considers yellow fever, in spite of its offering many analogies to bilious hæmaturic fever, to be nosologically distinct from that disease.

Other papers are—

"Abstract of Letters of Dr. Poggio on Yellow Fever in Cuba."—'Med. Times and Gaz.,' 1869, ii, 516.

Bellay, "Etude sur la Récente Epidémie de Fièvre jaune qui a sévi à la Guadeloupe" (1868-69).—'Arch. de Med. Nav.,' 1870, xiii, p. 177.

Cholera.

Fauvel ('Bull. de l'Acad. de Méd.,' t. 34, p. 1247) contributes some notes by Pelikan on an epidemic of cholera at Kiew, in Russia, in 1869. Towards the end of August several cases broke out among the gunsmiths, which up to the middle of October were looked upon as cases of sporadic cholera (Chol. nostras). From that time the disease took on an epidemic character, 115 cases being admitted into hospital between Oct. 17 and Dec. 11, 63 of them terminating fatally. Fifty-nine deaths occurred in the town, from the same disease, making up 112 in the space of two months. During the same month of November cholera appeared in several large towns in the neighbourhood of Kiew, as, for instance, 92 cases, with 45 deaths, at Orel; 21, with 17 deaths, at Relchilza, a town higher up the Dnieper than Kiew; and 9 cases with 3 deaths at Toula. Fauvel holds that these reappearances of the disease are never very severe, that they die out, that they never propagate themselves, or become the starting-point of epidemic invasion.

Thin ('Edinb. Med. Journ.,' xiv, p. 708), writing on cholera at Shanghai, asserts that it is by no means a new disease in China, but that its nature and treatment are discussed by the Chinese medical writers of the last century. In the epidemic of 1867 there were fifteen deaths from the disease; in former years, when it appeared at one port in China, cases occurred at other points also, but in this year (1867) no case was heard of at any of the ports in connection with Shanghai, and as far as is known, the few cases occurring there were the only ones met with on the coast of China. In this epidemic, as in that of 1862, there was observed a special liability of new comers to contract the disease. The majority of the cases occurring under his notice were, according to him, attributable to chilling of the body, previously hot, or to indiscretion in eating and drinking.

Milroy ('Lancet,' 1869, ii, 557) sketches briefly the rise and progress of cholera on the north-west coast of Africa, and goes back for its origin as far as the summer of 1865; at that time, after the memorable prevalence of the disease at Mecca, the epidemic broke out in Egypt, and after the arrival of the pilgrims and other persons from Alexandria, manifested itself throughout the Levant and the Mediterranean ports, but did not spread to, or show any tendency to become epidemic on, the Barbary coast, though crowds returned there. The immunity of Tunis, in spite of the numbers arriving from Malta, into which place they were supposed to have introduced the pestilence, was striking; the same was the case at Benghazi, and in Algeria; the disease, though repeatedly imported, never spreading among either the military or civil population. Throughout 1866 there was little, if any, cholera in Africa; in 1867 it made its appearance in Tunis and Algeria, and in 1868 was noticed in Tetuan, Ceuta, and Tangiers, places which, in spite of the great amount of intercourse between them and the Spanish coast, had entirely escaped in 1865, when the disease was epidemic in Gibraltar. In the spring and summer of 1868 it spread southwards as far as Mogador; later in the year it broke out at St. Louis, in lat. 16°, and is supposed to have spread inland along the Senegal river; in March, 1869, it was

raging in Macarthy's Island, and appeared in May in the colony of Bathurst, lat. 13°, proving disastrously fatal to the coloured population. These data show that the march of the pestilence in this part of the world was during two years slow and progressive along an extended line of country, a fact noticed in former epidemics elsewhere; and seem to suggest the presence of other factors beside personal intercommunication, without which the latter is insufficient for its extension.

Da Costa ('Amer. Journ. Med. Sci.,' lviii, p. 123) places on record a case of sporadic cholera occurring in a man, æt. 48, and terminating fatally by suppression of urine; he argues that the history and pathological appearances show how closely allied very bad cases of sporadic cholera are to the malignant disease, and how difficult it may be in isolated instances to draw the dividing line. Here were the same intestinal lesions, and the same suppression of urine; the difference consisted chiefly in the character of the discharges, which were serous, yet tinged with bile and fæcal matter: in the absence of cramps: and also in the fact that the attack commenced with diarrhœa and nausea after a hearty supper of terrapins.* Several bad but no fatal cases occurred at the same time in the neighbourhood, while neither in the preceding or following summer was cholera epidemic in the city (Philadelphia).

Macnamara, in his 'Treatise on Asiatic Cholera' (1870), after giving a valuable account of the epidemics of cholera since 1817, discusses its pathology; and opposing Dr. Johnson's views, argues strongly in favour of its being strictly contagious, and propagated from patient to patient by water contamination. On the same grounds Cunningham ('Fourth Ann. Rep. of Sanit. Comm., India,' Calcutta, 1868) accounts for the outbreak in 1867 among the pilgrims after Hurdwar fair (on the Ganges).

It was resolved at the International Conference on Cholera at Constantinople in 1867 (Fauvel, 'Exposé des travaux de la Conférence Sanitaire Internationale de Constantinople; mis en ordre et précédé d'un Introduction,' Paris, 1868), that cholera and diarrhœa are absolutely distinct affections, though the diagnosis may sometimes be difficult; that cholera starting—if it ever does so—in Europe, never spreads far; that all invading epidemics of cholera come from other parts of the world; that it is always carried by ships, railways, or caravans (so Graves); chiefly by persons, but also by clothes soiled by cholera dejections, &c., and possibly by merchandise, animals, and cholera-corpses; that water containing cholera matter is the most certain mode of contagion (so Snow, Jenner, N. Ratcliffe, and Billorst).

Bryden's 'Report to the Indian Government on the Cholera of 1866-8' contains a mass of carefully arranged information on the several epidemics of cholera in India, illustrated by excellent maps. He does not accept the contagious theory of cholera, and explains its spread as depending upon winds and other meteoric influences.

In a despatch to the India Office received from Dr. Kirk, H.M.

* A variety of turtle. The case is extremely like one of simple gastric irritation.—A. B. S.

Consul at Zanzibar, and dated Nov. 25, 1869, it was announced that the cholera-wave, which had before reached Persia and Arabia, had passed down to Eastern Africa, in accordance with Bryden's anticipation.

Virchow ('Archiv,' xlvii, 524) gives a case to illustrate the resemblance in the pathological appearances, as well as the symptoms, between cholera and poisoning by arsenic.

"The Cholera in W. Africa," 'Lancet,' 1869, i, 281, and cf. p. 441; Barth, "Résumé du Rapport sur les Epidémies de Choléra qui ont régné en France en 1856, 1865, et 1866," 'Bull. de l'Acad. de Méd.,' 1869, 271; Pettenkofer, "Die Choleraepidemien des Jahres 1865, in Gibraltar," 'Zeitsch. f. Biol.,' B. vi, 93, and "Die Choleraepidemien auf Malta und Gozo," ib., 143; Lewis, "Report on the Microscopic Objects found in Cholera Evacuations," pp. 78, with plates, Calcutta, 1870, and see in Calcutta Reports; Macpherson, "Cholera in the East," London, 1869 (Historical, on Contagion, Quarantine, &c.); Payne, "Quarantine and Cholera," Calcutta, 1869.

Enteric (Typhoid) Fever.

Liebermeister ('Deut. Archiv.,' vii, s. 156) gives a full account of three local epidemics of enteric fever, at Basle (1867), Zurich, and Solothurn (1865), in which the disease was limited to certain factories, houses, or barracks, and the cause of which was traced to the drinking of the same spring water charged with contaminated matters which had drained into it from neighbouring privies; the epidemic ceasing after proper measures had been taken to prevent the drinking of the poisoned water. He states that at Basle the disease broke out in a factory situated on a canal, the water of which, receiving the contents of the closets, filtered through into a spring used for drinking and cooking; and, to throw further light on this mode of contagion, he adds an interesting note of some cases of arsenic-poisoning, occurring several years before on the same canal, but lower down. For some time the outfall of an aniline factory, containing large quantities of arsenious acid, had been allowed to empty itself into the canal; the patients, suffering from the arsenic-poisoning, had been in the habit of drinking from a spring into which water from the canal drained through. Asserting that to the cases given and quoted he could add many others, the author goes on to say that though he holds it proved that the typhoid-poison may be introduced into the body in drinking water, and that an epidemic may originate solely in this way, he does not look upon it as the only mode of infection, but that breathing air contaminated by typhoid dejections in privies, or on bed and body linen, is a very frequent cause. He allows it to be at present an open question whether contagion by drinking-water occurs more frequently, in proportion to other causes; and he makes use of the epidemic in the Solothurn barracks (which is fully described in the paper), to show that there may be conditions, lasting throughout the year, which cause, after a total cessation of typhoid during the spring, and apart from any fresh introduction from without, a new eruption of the fever in the later part of the summer, attaining its height in the autumn, or even in the winter. Thus, as at Solothurn, there may be two sets of fever-patients, the first owing their attack directly to the drinking-water, the second to poison emanating from the dejections,

&c., of the first, and only indirectly to the water. The paper closes with some interesting cases in which the origin of the outbreak could be traced to poison given off from privies and clothes contaminated by fever-patients, and in which the drinking-water could be proved to be absolutely blameless; and attention is drawn to the fact that in cases of this kind, as De la Harpe also observed, the females of the family, and those who have most to do with the immediate nursing of the patient, by removing the soiled linen, &c., are generally the first to be attacked.

In the 'Rep. of the Med. Off. Priv. Council for 1869,' p. 74, is an account of the epidemic of typhoid fever in Wicken Bonant, Essex, imported from London, May 30, 1869, into a house the sewage of which drained into a brook, which again, when full, communicated "by fissure or otherwise," with the parish well. This case has certain difficulties in it, but Buchanan is disposed to say that the outbreak was somehow or another caused by the fever imported from London, and "that the water was the imminent cause of the epidemic." The latter affected in all forty-five persons, and caused four deaths. Among 118 people who got their water from private wells, only one positive case occurred in four months; two were doubtful at the time of Buchanan's visit; "the remaining cases occurred among eighty-eight persons who had no source of water supply except the parish well, some of them, however, occasionally taking water, when it could be had, from the brook. There were thus, among persons getting water from private wells, less than 3 per cent. attacked by fever; among persons getting water from the parish well, over 46 per cent. attacked." A note to p. 74 supports the above remarks of Liebermeister on the existence of two sets of patients: nineteen fresh cases of fever occurred at Wicken Bonant between Nov. 22 and Dec. 31, 1869; of these nine derived their water from the parish well, ten from private wells: "Evidently the poison of the fever has, in this period, been furnished from other sources."

Clifford Allbutt ('Brit. Med. Journ.,' 1869, i, 452) reports an epidemic of enteric fever at Ackworth, in Yorkshire, the area of which was "curiously conterminous" with that supplied by certain "water-troughs" used for drinking purposes. "A beautiful stream runs by several channels through a basin of excavation, the channels themselves then combining to form a main stream, which supplies the watering-troughs. The basin is filled with made earth, upon which are placed six or eight dwellings, with foul privies, pigsties, sumps, and other receptacles of filth. The contents of these places drain at once into the porous soil and into the stream, thus accounting for its pollution." In a part of Leeds where no other case existed, he was called to see a patient with enteric fever, who had visited the fever district at the very time when, "allowing for the duration of his illness and the time of incubation," he must have been poisoned. (Cf. with this a paper by the same "On the Propagation of Ent. Fever," ib., 1870, i, 308. Thorne, ib., 1870, i, 426, inclines to the sometimes spontaneous origin of typhoid.)

Gillespie ('Edin. Med. J.,' xv, 965) publishes some notes of a recent

epidemic at Donaldson's Hospital—thirty-one cases in children, and two in adults, all recovering; the disease appears to have been traced to a neglected drain.

Baginsky ('Virch. Arch.,' xlix, 505) describes an epidemic of typhoid fever in the isolated village of Seehausen.* There was a striking rarity of rose-spots. He could not trace its origin or progress to contagion.

Buhl ('Zeitsch. f. Biol.') says that when subsoil water is above the average for the month, cases of enteric fever are less frequent; when it is deficient they increase. Seidel finds the concomitant variation so regular that he calculates it is 36,000 to 1 against the connection being accidental. Jessen comes to the same result by another method of calculation; so also Thomas ('Archiv d. Heilk.,' vii, 385). These opinions confirm Pettenkofer's conclusions from the statistics furnished by the sanitary department at Munich. Indeed, the only exception known in Germany at this period is that of Königsberg, where there does not seem to be this inverse relation between the amount of subsoil water and the prevalence of typhoid fever.

Cold water (bath 68° F.; or packing; or affusion) in typhoid is recommended whenever the temperature rises above 104° F. (Jürgensen), or above 102·2° F. (Liebermeister). The latter uses the bath at intervals of two hours, keeping the patient in it for ten minutes. He also employs calomel in ten-grain doses; and iodine gr. $\frac{1}{3}$ (with a very little iodide of potassium) every two hours. When the cold water was used sparingly there were 130 deaths in 839 cases; when freely used, 33 deaths in 339. Jürgensen had only 6 deaths in 250 cases.

Czernicki ("Etude clinique sur la fièvre typhoïde, sa physiologie pathologique, sa marche et ses indications thérapeutiques;" 'Strasbourg thesis,' abstracted in 'Arch. Gén. de Méd.,' 1869, ii, 340) recognises two periods of fever, the first due to the primary infection of the poison, the temperature curve of which is typical and invariable; the second, the "abdominal period," that of secondary infection, as already named by Hirtz, the duration of which is variable. The first, the eruptive period, corresponding pathologically to the infiltration of Peyer's patches; the second, the suppurative, to their ulceration and cicatrization, which may be more or less retarded. With respect to treatment, the author believes it possible to obtain a decrease of the fever without arresting the local processes, and lays weight upon the success obtained by Hirtz in the use of digitalis. The indications of the second period he believes to point to the evacuation of the matters loading the intestines, the neutralisation of the putrid elements, the absorption of which is to be avoided, and the re-establishment of the general health.

Starting with the theory that in enteric fever we have to do with the result produced by an organized ferment acting through the blood upon the tissues, and the reaction of the latter against it, and making use of Béchamp's researches on the effects of creosote upon this form of ferment, Pécholier ('Arch. Gén. de Méd.,' 1869, i, 626) gives the results of its administration to sixty patients, and concludes that, though in

* Seehausen is in Prussian Saxony, on an affluent of the Elbe between Stendall and Wittenberge. The above paper contains an interesting account of the whole economy of a North German village.

advanced cases it is absolutely useless, in others, treated early, it not only lessens the intensity but shortens the period of the fever. Three drops of creosote in a mixture, and two injections containing from three to five drops, were ordered daily.

Broen ('Presse Méd. Belge,' 1869, 165) gives a case in which a man, æt. 21, recovering from a severe attack of typhoid fever, succumbed to a laryngitis; the autopsy showed the calibre of the larynx diminished by thickened mucous membrane; the cricoid cartilage surrounded by pus, which separated it from the mucous membrane and the muscles to which it gives attachment. The cartilage was black, altered in form, and ulcerated; the arytenoids had commenced to ossify at their summits. The fluid had made its way into the larynx by three small openings situated on the right side below the glottis. The latter was not swollen, but its mucous membrane, as well as the ventricles of Morgagni, the superior vocal cords, and epiglottis, was intensely injected; the thyroid gland was enlarged and hard.

Laveran ('Archiv. Gén. de Méd.,' 1870, i, 425) attempts to show that certain so-called "simple inflammatory" fevers deserve the name of "abortive typhoid fever," and can be diagnosed. To this class belongs every typhoid fever of a duration less than nine days (typhoid febricula, typhus levissimus of Griesinger, abortive typhus of Lebert and Niemeyer, mucous fever of some authors—the last a term that ought to be dropped altogether). The mean duration is ten to eleven days. Of twenty-five cases occurring under Coindet in the hospital of St. Martin, eleven are given in full. The fever never commences with severe rigors; should the latter occur they are very slight, and repeated. The temperature descends gradually, not (as in "ephemeral fever," gastric disturbance, &c.) abruptly. The secondary fever was noticed twice only in twenty-four cases, rose-spots in ten out of twenty-five, pain in the right iliac fossa in six out of twenty-five; bronchitis was present in all but six. Enlargement of the spleen, when it does occur, is a good diagnostic sign; generally it is absent or little marked. Peyer's patches seldom ulcerate. In spite of the apparent benignity of the symptoms and short duration of the fever, convalescence is always long—on the average fifteen days, other patients returning, on account of weakness, after leaving hospital. The disease may occur sporadically or epidemically, very frequently in certain epidemics of typhoid fever, of which it is a natural variety. Its prognosis is not grave; treatment cannot convert a true typhoid into an abortive one.

Zimmermann, "Zur Theorie der Tagesschwankung im Fieber des Abdominal-typhus," 'Deut. Archiv f. Klin. Med.,' vi, 561; Masserell, "Fall von spontanes Gangrän nach Abdominal-typhus," ib., v, 445; Soulier, "Étude critique sur la Fièvre Typhoide," 'Lyon Méd.,' 1869, ii, 374; Clément, "Tremblement généralise simulant la Paralysie Agitante observé dans le cours d'une Fièvre Typhoide," ib., iii, p. 494; Hervier, "Epidémie de fièvre à type continu à Rivé-de-Gier," ib., p. 489; Pfeiffer, "Beiträge zur Aetiol. und Pathol. des Typhus in Thüringen," 'Zeitsch. f. Epidem.,' i, Nos. 1 and 2; Guilbert, "Sur la Fièvre Typhoide très légère," 'L'Union Méd.,' 1869, vii, 19; Knoevenagel, "Beitrag zur Aetiol. des Typhus Abdom.," 'Berl. Klin. Woch.,' 1869, 484; Ulrich, "Laryngotyphus, Tracheotomie, Entfernung des Canüle nach 7 monaten; Heilung," ib., 485; Tallois, "Epidemie de Bruxelles, Empoisonnement Miasmatique," 'Presse Méd. Belge.,' 1869, 181; Churchill, "On an Epidemic Fever at Simon's

Town," 'Dubl. Journ.,' 1869, xlvii, p. 62; Thornton, "Rep. on the Epidemic of Fever in Cape Town, 1867," 'Army Med. Rep. for 1867,' ix, 381; Thorne, "Rep. on Epidemic Typhoid Fever in Winterton," 'Tenth Rep. Med. Off. Priv. Counc.,' 1868, p. 28, and "Rep. on the Epid. Typhoid Fever in Terlin," ib. p. 41; Buchanan, "Rep. on Outbreak of Typhoid Fever at Guildford," ib., p. 34; ib., 'Lancet,' 1869, i, 655.

Typhus.

Seidel ('Deut. Klin.,' 1869, s. 17) gives an account of seven cases of typhus occurring in the clinique at Jena, four of which were suffering from the disease on admission, the other three taking it in hospital. All the seven were of a severe type, and three died. There were no essential differences in the usual symptoms, though the temperature in the several cases presented such variations that in one he declares it would have been impossible to make a diagnosis from this alone. The spleen was enlarged in all, in six considerably so. The comparison of the urine in the several cases gave no positive results; in all but one it contained albumen, in some a large amount, in others only traces for a longer or shorter time.

Vital, in a long paper on the epidemic of typhus in the province of Constantine in 1868 ('Gaz. Méd. de Paris,' 1869, p. 85, &c.), considers it to have been a continuation of that which reigned in Algiers in 1861 and 1862, breaking out in the town of Constantine in the spring of 1863, and raging for several months, especially among the Jews. In 1867, under the influence of the famine caused among the Arabian population by the bad harvests, it spread so enormously that the victims to it, throughout the whole of Algeria, might be counted by hundreds of thousands; and as this miserable condition forced them into the midst of the Europeans, the epidemic broke out at numerous points among the civil population as well as in the garrisons, establishing beyond doubt its frightful property of contagion. Of 1273 patients treated in the hospitals and ambulances, 330 died; the autopsies showed ecchymoses in the pia mater, connective tissue, muscles, pleura, and peritoneum; thrombi of the spleen and lungs, and flabby heart. The disease was complicated in some cases with pneumonia, diarrhœa, and diphtheria; its symptoms and course seem to have offered nothing extraordinary. (With this paper, cf. Arnould, "Origines et affinités du Typhus d'après l'épidemie Algérienne de 1868," ib., 1869, p. 604, &c., and 1870, p. 164.)

Russell ('Glasg. Med. Journ.,' 1869, i, p. 269) gives two cases of fatal typhus, with rare complications:—one in a boy, æt. 3 years, with extensive meningitis, without tubercle in any organ; another in a man, æt. 45, with parotid inflammation and thrombosis of the left femoral vein, causing phlegmasia dolens. He publishes another case (ib., p. 411), in a man, æt. 32, which proved fatal from intestinal capillary hæmorrhage, blood being vomited and passed per anum, and death from collapse taking place on the fourteenth day of the disease. This was only the second case of the kind that had occurred in between 3000 and 4000 typhus patients in Glasgow. The same author, in conjunction with Coats (ib., 489), gives four cases, with histories and tables in full (one

fatal, without autopsy), bearing "on the excretion of urea in typhus in relation to the temperature."

Beveridge ('Med. Times and Gaz.,' 1869, i, 435), having demonstrated, in 1865, the existence of extensive enlargement of the cervical ganglia of the sympathetic in a case of exophthalmic goître, was led to examine the fatal cases of typhus in the epidemic prevailing at Aberdeen from 1863 to 1865. He gives briefly five cases (he found the same appearances in ten), in which he observed this lesion in the form of enlargement caused by the presence of a granular amorphous matter scattered in the substance of the ganglia, and rendering them not only larger, but firmer and harder than usual. He considers this affection of the ganglia in typhus to be analogous to that of the follicles in typhoid, and grounds on it a theory as to the cause of the brain symptoms and the impaired heart-action in the former disease.

Thompson ('Dubl. Quart. Journ. of Med.,' 1869, xlviii, p. 103) records a case illustrating the effect of quinine in typhus, in which the resolution of the fever is said to have been complete on the second day of its exhibition and on the thirteenth of the disease, the change having commenced on the eleventh.

Wallace ('Brit. Med. Journ.,' 1869, i, 535) gives three cases of the treatment of typhus by carbolic acid, and concludes that it does not cut short the course of the disease, or prevent septic poisoning or the irritative fever subsequent to the original affection.

Schröder ('Deut. Archiv f. Klin. Med.,' vi, s. 385), in a short paper on the influence of cold baths on the excretion of carbonic acid and urea in typhus, gives the results of his observations in nine cases (one of them enteric fever), and concludes that they cause marked diminution in the excretion of both products, and consequently retard tissue change.

Relapsing Fever.

Bernhardt ('Berl. Klin. Woch.,' 1869, s. 15) records three cases of recurrent fever, observed in the Königsberg clinique, affecting two Polish Jews and a Jewess, and imported, probably, from Russia. In two cases the third attack followed the second with only an interval of a single day, and lasted only one day. In all the cases the spleen was considerably enlarged, the liver in two cases only showing a slight increase in size. Following on these three cases, besides which several occurred in the town, one was observed in the clinique which should probably be looked upon as a case of bilious typhus. It was accompanied with, at first, bilious, then bloody vomiting, profuse diarrhœa, hæmaturia, marked icterus, delirium, and swelling and tenderness of liver. The enlargement of the spleen was trifling. In the bloody albuminous urine the bile acids could be recognised, while Gmelin's test failed to show the presence of the colouring matter of bile.

Mosler (see ib., s. 334) observed twenty-seven cases of the disease in Greifswald, between March, 1868, and April, 1869. With the exception of two hospital attendants, who caught the infection, the patients attacked were labourers from elsewhere; in all, the different stages of

the disease corresponded; the length of the first attack was 5·3 days, that of the intermission 8·0, and that of the relapse 3·6. Recovery was very prolonged, on an average 45·6 days. No fatal case occurred.

Aufrecht (ib., s. 307), after stating that no case occurred in Magdeburg itself, mentions that fifteen cases, one only of which was a female, were admitted into hospital from various districts and towns. The first was taken in July 20, 1868; the rest between Dec. 31, 1868, and the end of February, 1869. Two relapses occurred in one case only. All recovered.

Wunderlich ('Arch. der Heilk.,' x, 314) treated seven cases in Leipsig, five imported from Berlin, one from East Friesland, and only one occurring in the town itself, the latter without any proof of contagion. The disease ran its usual course, especially so far as the temperature, pulse, and sweating were concerned. In one fatal case the autopsy showed the spleen enlarged, soft, and of a brownish-red colour, with numerous scattered hæmorrhagic points. Almost all the lymphatic glands were swollen, soft, succulent, presenting recent hyperæmia, in several places with medullary infiltration.

Steffen ('Jahrb. f. Kinderk.,' ii, 61) gives, with very full tables, temperature curves, &c., four cases of relapsing fever occurring at Stettin in Aug., Sept., and Oct., 1868, in two brothers, æt. 12 and 13 years, and two sisters, æt. 13¼ and 7¼. The last two had suffered from typhus (exanth.) and typhoid in the two preceding years. In the first two cases there was moderate enlargement of the spleen, and the period between the acme and the relapse was only a few hours. In correspondence with this the collapse after the second attack was trifling, and in place of the usual critical and abundant perspiration there was a general and extensive miliary eruption. In the second set of cases the relapse lasted for two and a half days, and here, too, though there was no miliary eruption, the critical sweating was absent. In all the cases the sensorium was completely free throughout.

Lösch ('Wien. Med. Woch.,' 1869, p. 108) publishes a case of febris recurrens, in a man æt. 27, in whom, while the disease ran its ordinary course, the first attack was followed by an eruption of urticaria, extending over the whole body, except the face and hands, accompanied, where it was most developed, by slight itching.

Riesenfeld ('Virch. Archiv,' xlvii, p. 130) publishes, under Virchow's direction, analyses of the urine in thirteen cases of relapsing fever, all of which recovered. The ages were mostly between twenty and thirty. The amount of urates was not critical. Albumen was always present, and often casts of the tubes as well. (This differs from Murchison's experience.) No sugar or bile-pigment was detected. The chlorides were diminished or absent, as in other fevers. The urea was increased in amount with each attack, but not in proportion to the increase in temperature, and it also fell more slowly. The phosphates were increased, and appeared to vary almost directly with the urea. Tables of curves in five cases are added.

Huppert ('Archiv d. Heilk.,' x, 503) has made observations on the transformation of nitrogen in this disease in two patients, males, both well nourished, one (H.) æt. 18½, the other (E.) æt. 22. They were

allowed to eat as they wished; H. took nourishment relatively rich in fat and hydrocarbons, with more than twice as much nitrogen as E.; the food of the latter was not only poorer in nitrogen, but contained for the same quantity of nitrogen less combustion-matter. From the composition of the food it was evident that H. assimilated daily, after the fever, from four to five grammes of nitrogen; E., on the contrary, who during convalescence was in a condition of partial hunger, assimilating only from 1·5 to 2 grammes. He concludes from his observations that the waste products of albuminous matter were not excreted on the day on which the increase in temperature had occurred; but as it is not probable that the final products of albuminous matter can stay so long in the organism without being excreted, the only change that can take place must be one from organized to assimilable albumen (Vorrathseiweiss); or, as seems more likely to the author, from these two observations (the decrease in the excretion of nitrogen following more slowly in the patient who was insufficiently nourished than in the one who took richer food), organised albumen (Organseiweiss) undergoes, during the fever, a decomposition into a non-nitrogenous product, which is perhaps used up, and into a still more complicated nitrogenous residue, which is decomposed only at a subsequent period. From the fact that the increased excretion of nitrogen occurs only after the rise in temperature, it may be concluded that in febrile attacks rapidly succeeding each other an accumulation of nitrogen may take place.

Riess, "Beobachtungen über Febris Recurrens," 'Berl. Klin. Woch.,' 1869, 327, 337; Obermeier, "Ueber das Wiederkehrende Fieber," 'Virch. Arch.,' xlvii, 161; Pastau, "Die erste Epidemie von Febr. Recurrens in Schlesien," ib., 282; Fräntzel, "Ueber Krisen und Delirien bei Febr. Recurrens," ib., xlix, 127; Lebert, "Beiträge zur Kenntniss des Biliösen Typhoids nebst Beschreibung eines seltenen Falles von Typhus Recurrens," 'Deut. Archiv,' vi, 501; Duffin and Kelly, "Cases of Relapsing Fever," 'Med. Times and Gaz.,' 1869, ii, 430; Lebert, "Aetiologie und Statistik des Rückfallstyphus und des Flecktyphus in Breslau in den Jahren 1868 und 1869," 'Deut. Archiv,' vii, 385; Schultzen, "Ueber den Stickstoffumsatz bei Febris Recurrens," 'Ann. der Charité-Krankenh.,' xv, 153; and see several papers in the 'Brit. Med. Journ.,' 1870.

Insolatio (*Sunstroke*).

Nolan ('Dub. Quart. Journ.,' 1869, xlvii, 72), after remarking that the most common cause of sunstroke is an elevation of temperature ranging from 104° to 120° and 125° F. in the shade; that the disease is rarely epidemic at a temperature below 102°; and that isolated cases occur at all times on foreign stations, irrespective of the degree of solar heat, from enfeebled health, or want of due precaution; describes the following varieties:

(*a*) Characterised by suddenness of accession and abruptly fatal termination, usually occurring about 3 or 4 p.m., rarely before midday, the autopsy showing congestion of the lungs amounting almost to blackness, the rigor mortis and great heat of body being persistent for a considerable time. To this form the term "sunstroke" is particularly applicable.

(*b*) Characterised by premonitory symptoms (weariness, exhaustion, frequent sighing, desire for sleep), comparative slowness of accession, and long duration.

(*c*) The convulsive form, with premonitory symptoms of extreme irritability, arising usually from continued exposure to the sun of the neck and shoulders.

He adds two other varieties, rather divisions of the first form; one in which the pulmonary, the other in which the cerebral symptoms predominate. The treatment he gives for the different varieties he practised in cases occurring at Zoulla and Komaylee.

Vallin ("Récherches expérimentales sur l'Insolation," 'Arch. Gén.,' 1870, i, 129) exposed animals to the sun during the months of June, July, and August in Paris, and, in spite of the relatively moderate intensity of solar radiation there, death always supervened in one or two hours; post-mortem examination showed constant lesions which seem capable of explaining death.

Seven experiments are given, the first very fully; the symptoms are divided into three periods:

1. Lasting from twenty-five to thirty-five minutes; at the end of a few minutes accelerated respiration; salivation; coma and trismus. Temperature in the rectum rising from 38° or 39° to 43·5°, in one case to 44·0° C.

2. Lasting about five minutes; rapid or gradual fall in number of respirations, which become sighing; evident prostration. Rectal temperature between 43·5° and 44·0°.

3. The convulsive stage. In some cases a shuddering, a kind of "horripilation" of the whole body, or repeated shiverings of different limbs; in others a more marked tetanic movement, with arrested respiration, protruded, quivering eyeballs, clonic convulsions, lively wriggling of the tail, and voiding of urine, succeeded by coma, which terminates in death, sometimes two or three minutes after the first convulsion. Generally the thermometer marks at the onset of the seizure 44°—44·5°, at the moment of death 44·2°—46·1°, and remains above 45·0° two or three hours after death.

The principal lesions found post-mortem are the sudden and excessive rigidity (wooden hardness) of the left ventricle and diaphragm, not excited to movement by electricity or pinching, &c., and, in a less degree, of the muscles of the trunk and limbs, together with a strongly acid reaction of the whole muscular tissue, more especially that of the left ventricle; in addition to this, relative arterial anæmia, and general venous congestion.

Upon these facts he lays great stress; the rigidity of the ventricle hinders the renewal of blood, that of the diaphragm the renewal of oxygen. After stating that, with some exceptions, rigidity and acid reaction are the index of the death of muscular tissue; that asphyxia, as such, plays only a secondary part in insolation; and after reviewing experiments made by Cl. Bernard and others, the author proceeds, in support of his view as to simple asphyxia and its share in the disease, to quote two experiments made on animals with regard to the composition of the gas dissolved in the blood, when killed by (artificial) heat. One result was, as Setschenow had already shown, that while oxygen was entirely absent, the quantity of carbonic acid remained normal.

Able to explain the rigidity of the heart, &c., only on the theory of a

coagulation of the juice (suc) contained in each muscular fibre, he made four further experiments on the *local* application of heat to the head; the symptoms were different, consisting mainly of an insensibility like that produced by chloroform; a post-mortem examination of two showed flaccidity of the heart and limb-muscles, together with absence of pulsation of the heart, whether immediately after death or on the application of electricity.

After discussing the meaning of these latter experiments, and reviewing others made by Cl. Bernard and himself, he concludes that they may all be ranged under two heads:

(*a*) In the one the production of heat is rapid and general, the temperature of the blood rising to 45·0° C., and death occurring, after convulsions, by the coagulation of the left ventricle and general venous distension.

(*b*) In the other, the production of heat is slower, and influences especially the nervous centres, the temperature of the blood rising but little; the cause of death seems to be a profound disorder of innervation, and, in consequence, arrest of the heart's action during the relaxed state, just as after excitement of the pneumogastric.

These two forms correspond well with those described by authors as sthenic and asthenic forms of insolatio.

Thompson ('Brit. Med. Journ.,' 1870, ii, 35) records a "fatal case of sunstroke, with rise of temperature after death," in a butcher, æt. 59. He had had temporary hemiplegia a year before; three of his family had died of apoplexy; the autopsy revealed atheromatous arteries, dilated and hypertrophied left ventricle, and fluid blood.

*The Acute Exanthemata.**

Bouchut ('Gaz. des Hôp.,' 1870, 285) publishes two cases of paralysis after acute exanthemata, one of general paralysis after variola, in a girl æt. 8 years, the other paraplegia in a girl æt. 4 years. In both there was a basic anæmic bruit, in both hyperæmia of the optic disk; in the case of the child recovering from variola the right eye was much affected, while the left was normal. The cause of the paralysis he conceives to be the general anæmia, giving rise to disorders of the vaso-motor nerves, followed by congestion or ischæmia of the cerebro-spinal meninges (névroses ischémiques et congestives). The

* In reference to the treatment of these and other febrile affections by cold water, it may be well to call the attention of readers unacquainted with the book to the "Medical Reports on the effects of Water, Cold and Warm, as a remedy in Fever and other Diseases, whether applied to the Surface of the Body or used Internally," by James Currie, M.D., F.R.S. (2nd edit., 1 vol., Liverpool, 1748; 3rd edit., 2 vols., 1804). Chapter I contains the narrative of a certain Dr. Wright, who, suffering from a contagious fever, "put in practice on himself what he had often wished to try on others, in fevers similar to his own"—three buckets of salt water thrown upon him at once, with immediate relief to the headache, &c. Struck by this, and encouraged by the example of one of his colleagues, Dr. Brandreth, Currie employed cold affusion in fevers, smallpox, &c. His observations on the cases, as well as on his use of the thermometer, for which he promised greater things, are worth notice. Is it to this or to some other writer that Hebra refers under the name Curié ('Hautkrankheiten,' s. 156)?—A. B. S.

treatment consisted of the salts of iron and quinine, baths, and the induced current.

Keith ('Lancet,' 1869, i, 143) gave carbolic acid in 600 cases of scarlet fever, measles and smallpox, five only of which were fatal. The physiological effects are said to be—1, profuse sweating; 2, rapid lowering of the pulse; 3, cleaning of the tongue, and in scarlet fever diminution in the soreness of the throat; 4, improved appetite; 5, the earlier it is given the more useful it is; 6, in some cases it gives a smoky appearance to the urine. He employed the following mixture:—Carbolic and acetic acids, of each ʒj—ʒiss; tincture of opium, ʒj; chloric ether, ʒj; water to 8 oz.; a table-spoonful every four hours till the fever had subsided.

Kugelmann ('Deut. Klin.,' 1869, s. 156) considers that the first therapeutical indication in all the acute exanthemata is to establish a system of continuous ventilation, without exposing the patient to the direct draught, by leaving the door and window open day and night. Insisting strongly that the fauces in scarlet fever should be carefully watched for diphtheritic deposit, he employs, when this complication arises, the method of Dyes—chlorine water and distilled water, of each a teaspoonful every hour, till all traces of the deposit have disappeared. In the course of twelve years he has treated in this way 500 cases of measles and 150 of scarlet fever between the ages of eight months and thirty-eight years, without losing a single patient, and, except in one case, without meeting with a single severe complication or sequela; and he thinks he may conclude (1) that under this treatment the diseases in question become most trifling affections; (2) and that the so-called malignant epidemics are the result of bad treatment (artefacte).

Thomas ('Jahrb. f. Kinderheilk.,' 1870, iv, 1) publishes fresh observations on the simultaneous occurrence of two acute exanthemata. He gives four cases:—Varicella and scarlet fever in a girl æt. 4 years; scarlet fever and varicella in a girl æt. 1½ year; varicella and measles in a girl æt. 1 year; measles and varicella in a boy, æt. 2 years; varicella thus occurring twice as the primary, twice as the secondary affection. It is, perhaps, worth noticing that when varicella is followed by scarlet fever or measles, the latter diseases are of unusually trifling intensity, while in cases in which varicella succeeds them, its eruption is in some cases a protracted one, and in others accompanied by rather intense pyrexia; the whole process consequently being more severe. In no case, however, was the characteristic appearance of the eruption altered. In conclusion, just as in these cases there was but little difference in the essential disturbance, viz., that of the skin, there was little difference also in the characteristic symptoms, though, in accordance with the lighter nature of the general affection, they were less marked; in consequence there were wanting, more especially, the red tongue with its swollen papillæ and clean surface and the catarrh of the mucous membranes, corresponding respectively to scarlet fever and measles. The paper concludes with an analysis of a number of cases observed by other authors.

Blache ('Gaz. des Hôp.,' 1870, 146) gives two cases of the simultaneous eruption of measles and scarlet fever. The first occurred in a girl, æt. 3 years, who had been among children convalescent from scar-

let fever and measles, and was admitted with the prodromal symptoms of the latter affection. Next day a red punctated rash was observed on the arms, accompanied by the usual symptoms of measles, and some angina. Twenty-four hours later the eruption appeared on the face, and was clearly that of measles, while on the back it resembled that of scarlet fever, the angina becoming diphtheritic. On the fourth day of the eruption the scarlet fever rash began to fade in places; elsewhere the two eruptions were seen together; both had disappeared next day. There was no albumen. On the sixth day a branny and scaly desquamation commenced at the same time; the diphtheritic mischief and the accompanying adenitis became worse; abscesses and gangrene supervened, and the child died of exhaustion on the twenty-third day. The second case was that of a scrofulous girl of four years, who was attacked, after having been almost two months in hospital for chorea, with fever and angina. On the third day a distinct scarlet fever rash appeared; on the fifth day the angina became diphtheritic, and on the sixth an eruption of measles, with cough and injected conjunctivæ, showed itself; two days later both eruptions faded; the diphtheria and adenitis, as in the former case, increased; the desquamation was more branny than scaly, and on the twelfth day the child died of general diphtheria, complicated with double broncho-pneumonia. After discussing the views of Hildenbrand, Schönlein, &c., as to whether these cases belong to rubeola (Rötheln), he considers them to be mixed forms, in which one or other exanthem predominates (rougeole scarlatineuse and scarlatine morbilleuse).

Scarlet Fever.

In opposition ("Klin. Stud. über die Nierenkrankung bei Scharlach," 'Arch. der Heilk.,' 1869, xi, s. 130) to the view put forward by Eisenschitz and others, that no case of scarlet fever occurs without some affection of the renal tubes, any more than measles without catarrh of the nasal, conjunctival, and respiratory passages, Thomas finds from his investigations during an epidemic, in which the urine was examined daily from the very commencement of the affection in twenty-five out of eighty cases, that the catarrh of the tubes, recognised by the presence of cloudy kidney-epithelium, sometimes connected in the form of casts, was, so far from being frequent, a by no means constant occurrence. He draws attention to the fact that in the course of severe febrile diseases, generally in consequence of an alteration in the circulatory system caused by the fever, the tube-epithelium is shed in great quantity, and that, consequently, no diagnosis of a specific catarrh should be made from this alone. On the other hand, certain cylinder-like bodies, frequently noticed by Thomas at the commencement of the scarlet fever affection, may perhaps owe their existence to this specific cause, as they are not to be found in normal urine. Of these bodies, to which he gives the name "cylindroids" (Cylindroide), he describes four varieties—(*a*) either transparent, of considerable length, corrugated, or forked, or broad, tolerably regular in form and size, presenting a longitudinally striped appearance, often split or fringed at the ends, in-

dented obliquely, and twisted on their axes; (*b*) somewhat smaller in size, nearly as broad as the ordinary hyaline-cylinder, without folds or fringed ends, and with oblique depressions and fractures; (*c*) less broad, more delicate, and longer than the usual small hyaline-cylinder, with few fractures, agreeing otherwise with the last, having the appearance of a narrow ribbon with perfectly parallel contours; (*d*) extremely fine, and as though formed by a division of the third variety into fibrillæ. Complete transitional forms may occur between the different varieties and the true hyaline-cylinder, the cylindroid frequently assuming the likeness of the latter, but easily to be distinguished in its simple form.

Baginsky ("Experimentelle Studien über die Nierenkrankungen im Scharlach," 'Centralbl.,' 1870, p. 497) gives the results of his experiments, in which he covered large portions of the skin of rabbits with gum, oil, or varnish, or by means of irritating substances (croton oil, turpentine) induced extensive inflammations of the skin, or combined both methods. The urine of nearly all the animals was albuminous, and they died in the course of one to nineteen days. He holds that in these cases there was extensive inflammatory affection of the skin, leading to morbid changes in the kidneys, followed by active hyperæmia, which, after a longer period, caused parenchymatous and interstitial alterations of tissue. He denies that the cylindroids described by Thomas are confined to scarlet fever, and concludes from his experiments that the treatment of the disease consists in an encouragement of skin-activity (Hautcultus) by baths, and rubbing with lard, either alone or combined.

Budd ('Brit. Med. Journ.,' 1869, i, 23) enforces the following simple precautions:—(1) Dismantling of the room of all needless woollen or other draperies; (2) a basin of chloride of lime, or other disinfectant, always on the bed for the patient to spit into; (3) a large vessel containing water impregnated with chlorides or Condy's fluid, always in the room, for the immediate reception of all bed- or body-linen; (4) the employment of rags instead of pocket-handkerchiefs, burnt as soon as used; (5) plentiful supply of all apparatus needful for the frequent washing of the nurse's hands; (6) scrupulous cleaning of all glasses, &c., used by or about the patient; (7) immediate reception of all excreta into vessels charged with disinfectants. He is in the habit of anointing the body, the scalp included, with olive oil twice a day on the first appearance of the white efflorescence marking the commencement of desquamation which may be observed on the neck and arms as early as the fourth day of the eruption; the oiling is continued till the patient is well enough to take a warm bath, when the whole body is scrubbed with disinfecting soap; the baths are repeated every other day till four have been taken, when the skin may be looked upon as disinfected; in a week or ten days longer, no other complication being present, the patient may be considered as no longer the carrier of contagion. These measures conclude with thorough disinfection of the sick bedroom, and the washing or destruction of the nurse's dresses, which should be of linen or some other smooth stuff. The same measures apply, *mutatis mutandis*, to smallpox, measles, typhus, &c.

Thompson ('Lancet,' 1869, i, 291), on the very first access of the fever, puts the patient into a warm bath, which is repeated as often as

the strength of the individual allows or the severity of the disease requires. This produces a soothing and refreshing feeling, followed soon by an eruption, vivid in colour and astonishing in amount, the surface of the body being, after the bath, "dabbed," not rubbed, dry. This practice he has followed for fifteen years without losing a single patient, and he asserts that contagion is thereby avoided. During convalescence the temperature of the bath, used daily or every other day, is gradually reduced.

Bramwell ('Brit. Med. Journ.,' 1870, ii, 30) affirms that local bleeding is highly beneficial in acute scarlet-fever dropsy. Out of nineteen cases he lost but one, and he gives reports of the cases of five boys, between the ages of five and eleven, in whom he asserts recovery to have followed this treatment.

Thomas ('Jahrb. f. Kinderheilk.,' 1870, iv, 60) gives an interesting case of scarlet fever, in a boy aged about five years, characterised by the existence of normally pale skin between the several hyperæmic spots of scarlatina variegata and the appearance of an intense and characteristic second exanthem.

In the 'Brit. Med. Journ,' (1869, ii, 659) will be found a summary of Virchow's remarks, at the forty-third meeting of German naturalists and physicians at Innsbruck, on the various forms of kidney affection after scarlet fever, and on "casts" generally. He distinguishes two forms of scarlatinal nephritis—the first the catarrhal, characterised by the proliferation of the epithelial cells in the tubes of the medullary substance, similar to that taking place in catarrhal pneumonia; the second the parenchymatous form, in which changes and degeneration of the cells occur, without proliferation, commencing in the cortical substance, near the Malpighian glomerules. He has ceased to recognise a third form, the croupous, since he has convinced himself that there is no disease of the kidneys characterised by a peculiar kind of fibrinous casts; the latter might possibly be formed in the tubes by the contact of albuminates of soda with a solution of salts, and their presence is indicative only of a change in the kidneys, not of its quality or intensity.

Rehn ('Jahrb. f. Kinderheilk.,' ii, 439) gives a case in which the incubation-period was at most 48, probably only 24 hours in duration.

Fennell, "Digitalis in Scarlet Fev.," 'Lancet,' 1869, i, 143; Prior, "Contribution to the Hist. of Scarlatina" (precautions for preventing its spread), ib., 1869, ii, 570; Veasy, "Sphacelus of the Hand from septic poisoning with latent Sc. Fev.," 'Brit. Med. Journ.,' 1869, i, 115; Spender, "Notes on the Treatment of a few of the less common Complications of Sc. F.," ib., 1870, ii, 60; Johnson, "A Lect. on Sc. F. and its Prevention," ib., 545; Renfrew, "On Sc. F., with special reference to Pathology and Treatment," ib., 676; Blaupain, "Scarlatine, Gangrène spontanée des membres, Embolies, Mort," 'Arch. Méd. Belges.,' 1869, May, 322; Feargus, "On Scarlatina," 'Lancet,' 1869, ii, 702; "Scarlatine compliquée de Rougeole," &c., 'Arch. Gén. de Méd.,' 1869, ii, 603; Shettle, "On the Treatment of Sc. F.," 'Brit. Med. Journ.,' 1870, ii, 114; Hennig, "Die Keimzeit und die Grenzen der Mittheilbarkeit des Scharlachs," 'Jahrb. f. Kinderheilk.,' 1870, iv, 78; Thomas, "On the Classification of Cases of Scarlet Fever," ib., iii, 85; Jenner, "Clinical Lecture on Scarlet Fever," 'Lancet,' 1870, ii, 35; Böning, "Beobachtungen über Scharlach," 'Deut. Klin.,' 1870, 273; Lutz, "Eine Beobachtung des Cheyne-Stokes' schen Respirations-Phänomens bei Scharlach," 'Deut. Archiv,' viii, 123; Oewre, "Gleichzeitiges Vorkommen von Scarlatina, Croup, Diphtheria faucium, und Parotitis in

einem Hause," 'Arch. f. Derm.,' i, 205; "Undiscovered Exanthems," 'Brit. Med. Journ.,' 1870, i, 62; "Mem. on Precautions to be taken against Sc. F.," 'Rep. Med. Off. Priv. Counc.,' 1869, p. 69.

Measles (Morbilli) and Rötheln (Rubeola).

Giraud ('Gaz. des Hôp.,' 1869, 339), after observing 108 cases of measles, declares decisively that the affection is never propagated except by direct contagion. The incubation period he considers to be from thirteen to sixteen days; in three only of his cases did the rash appear as late as the sixteenth day; in all the rest it was developed on the thirteenth or fourteenth day, but never before the thirteenth, and never after the sixteenth.

Monti ('Jahrb. f. Kinderheilk.,' ii, 76) holds, in opposition to Förster, that the immunity from measles in children under one year is by no means constant. Of 502 children treated in St. Ann's Hospital for this affection, 105 were under that age. He decides that it is impossible to fix the age at which measles is most frequent; that children are liable to it at any age; that sex makes no difference; that the mortality from measles (as evidenced by his sixth table) is greatest during the first year of life, and greater in children under five years than beyond that age.

Larivière ('Gaz. des Hôp.,' 1869, 435) gives a case of paralysis of the lower extremities after measles in a child a year old.

Neumann ("Ueber einen seltenen Verlauf von Morbillen," 'Wien. Med. Zeitg.,' 1869, 316) publishes a case of pustules in the skin occurring in measles in a child aged two years.

Thomas ("Beobachtungen über mäsernähnliche Hautausschlage," 'Archiv. d. Heilk.,' x, 450) gives three cases of secondary rötheln, with febrile bronchitis; a fourth case, in which rötheln were developed after severe febrile symptoms, lasting for fourteen days, and resembling typhoid; and five cases of measly eruption in patients suffering from scarlet fever, appearing in one case on the eleventh day, and in four between the fourteenth and seventeenth days of the original disease, all of which he considers to be scarlet fever relapses. Curves of the temperature in all the cases are given, with two tables, for comparison, of normal measles and normal febrile rötheln.

The same author ("Beobachtungen über Rötheln," 'Jahrb. f. Kinderheilk.,' ii, 233) gives in a somewhat long paper a full description, with cases, of the symptoms, &c., of rötheln. According to his observations during an epidemic of scarlet fever, the exanthem of rötheln bears only a resemblance to that of measles, and has not the slightest affinity with scarlet fever. Of 55 patients, 2 only were adults, a man of twenty-four and a girl of eighteen years; all the rest were under twelve, the great majority of boys attacked being between the ages of one and three years, that of the girls between seven and ten years.

Steiner ('Arch. f. Derm.,' i, 237) observed 21 cases of rötheln, all except one in private practice, several occurring sporadically, the majority epidemically. The patients were children between eight months and ten years, of whom eight had never suffered from any acute exanthem. Of the rest, seven had had measles only, and six measles and scarlet

fever. The symptoms in all the cases, four of which are given in full, were alike, consisting of an abundant maculated eruption, without prodromata, extremely fugitive, in no case lasting more than eight hours, with but slight, if any, rise in temperature or pulse, not accompanied by catarrh or desquamation, and having no abnormal effect on the general condition of the child. In one case the eruption was immediately preceded by measles. He holds that rötheln is an affection *sui generis*, which ought to have an independent position in the list of dermatoses; that the skin affection is an acute hyperæmia, without exudation, and that the disease is not contagious.

Murchison ('Lancet,' 1870, ii, 595), in an historical and clinical account of rötheln, holds that, though partaking of the characters of both measles and scarlet fever, it has some claim to be reckoned specifically distinct from both; he concludes that the rash appears on the second day, or even within the first twenty-four hours of the premonitory fever, lasts from four to ten days, disappears with branny scales, and is always accompanied with sore throat, scarlatinous tongue, and catarrh; that the disease can propagate itself; that it does not protect from scarlet fever or measles, nor does a former attack of either of these diseases give any protection from it. Occasionally it is severe or fatal, and in rare instances is followed by dropsy.

Poland, "Acute Death of the right Superior Maxillary and Malar Bones after Measles, puriform infiltration of orbit, sloughing of eye, cerebral symptoms; death" (thrombosis of right cavernous sinus), Med. Times and Gaz.,' 1869, i, 383; Fagge, "Case of Measles followed by Diphtheria, death," 'Lancet,' 1869, ii, 436; Emmingshaus, "Ueber Rubeolen (Rötheln)," 'Jahrb. f. Kinderheilk.,' 1870, iv, 46; Scattergood, "Morbilli and Rubeola," 'Brit. Med. Journ.,' 1870, i, 121.

Variola.

Simon ('Arch. f. Derm.,' 1870, ii, 347) calls attention to the prodromal exanthem of smallpox, appearing first on the second or third day of the attack, lasting from one to nine days, and met with generally on the hands, dorsum of feet, front of knees, and elbows; he gives thirty-six cases in illustration.

Quinquaud ('Gaz. des Hôp.,' 1870, 385) concludes that the following lesions are met with in smallpox:—(1) Acute hypertrophy of the lymphoid organs, the spleen, glands, and closed follicles of the intestines. (2) Degenerations of the lungs (lobular or vesicular pneumonia), of the heart, liver, kidneys, testicles, &c. The granular fatty degenerations of the muscles or viscera, with or without inflammatory mischief, are met with especially in severe cases of variolous poisoning, with death during the earlier days of the disease. The presence of albumen in the urine is frequent in alcoholic patients, rare when variola occurs in healthy subjects.

Durosiez (ib., 1869, 134), following in the steps of Sydenham, attempts to establish the possibility of the association of variola and typhoid. The former frequently occurs during convalescence from the latter, with undoubted symptoms, and yet modified, sometimes appearing only as fever and vomiting, without eruption, or eruption without fever; or the two diseases may be combined in such a manner

as to modify one another, and make the diagnosis difficult. In support of his view he notices the fact that the action of the vaccinal virus is retarded or arrested in the course of the acute exanthemata, in tubercular diseases, in typhoid fever, &c. From May to October, 1857, an epidemic of variola raged in the hospital alongside of an epidemic of typhoid. He gives briefly a series of cases of typhoid which during convalescence were attacked by variola—several attended with a fatal termination—in which either the typhoid eruption or the prodromata of smallpox was modified. He concludes that these two diseases may modify each other; that they may coexist in the same individual; that Sydenham's continued variolous fever seems to be admissible, and that variola sine variolis may exist.

Guéniot ('Gaz. des Hôp.,' 1870, 398) gives the following history: a child, twenty-seven days old, apparently in good health, was brought to the Hospice des Enfans-Assistés, Feb. 18, 1870, and vaccinated next day. Two vesicles only were developed on the left arm. On March 8 twenty sisters in the hospice, between the ages of twenty and sixty-five, were revaccinated from this child, and from the same and another fifteen nurses, between twenty and thirty years, and a whole boarding-school of young girls, the child being perfectly well. On the 12th it was attacked with smallpox and died next day. None of the revaccinated had smallpox.

The following means for causing abortion of the variolous pustule may be found in the 'Journ. de Méd.,' 1870, p. 88 (quoted from 'L'Union Méd.'). The parts intended to be preserved from scars are to be touched with a badger's-hair brush dipped in tincture of iodine once a day, the application commencing with the first appearance of the eruption, and continued for five or six days.

Pepper ('Amer. Journ. of Med. Sci.,' lviii, 32) describes very fully a severe epidemic of variola which prevailed in 1865 in Philadelphia, attacking mainly children under fifteen years. His remarks on vaccination and its influence contain nothing new.

Pellarin ('L'Union Méd.,' 1869, vii, 697) adds further facts which help to fix the average incubation of smallpox as fifteen days.

Weiss ('Wien. Med. Woch.,' 1869, No. 34) publishes a case of two attacks of variola in a child in the course of two months (? !).

Jutils, "Eruption Varioleuse précédée d'une longue période prodromique," 'Gaz. des Hôp.,' 1869, 281; Ballard, "On the Distribution of Smallpox according to age during the Epidemic of 1862—1868, as it affected Islington," 'Med. Times and Gaz.,' 1869, i, 599; Isambert, "Variole Rash chez une Femme enciente, avortement, hémorrhagie, mort," 'L'Union Méd.,' 1869, vii, 851; Chassagny, "Contribution à l'Étude des Maladies virulentes" (on the non-identity of Variola and Vaccinia, &c.), 'Lyon Méd.,' 1869, i, 381; Marchal, "Case of Hæmorrhagic Variola," 'Gaz. des Hôp.,' 1870, 381; "The recent Epidemic of Smallpox," 'Med. Times and Gaz.,' 1869, i, 389; Menzies, "Smallpox in connection with Vaccination," 'Brit. Med. Journ.,' 1870, ii, 587.

Varicella.

Thomas ("Ein Beitrag zur Kenntniss der Varicellen," 'Arch. f. Dermat.,' i, 329) concludes a very long paper with the remark that it cannot be too often insisted upon that varicella and varioloid are two

distinct diseases, both infectious, both causing a characteristic skin affection. He shows from a table that in Leipzig the contagion of varicella is endemic, while that of variola finds only periodically the conditions favourable to its spread.

Martineau ("Pétite épidémie de Varicelle," 'L'Union Méd.,' 1869, vii, 835) describes several cases of varicella, the incubation period of which was thirteen days. He maintains strongly the well-marked difference separating this affection from variola and varioloid.

Wolff ("Variola, Variolois, Varicella," 'Deut. Klin.,' 1869, 61) holds it is in many cases difficult to distinguish, with any certainty, varicella from varioloid. He cites a series of observations, according to which it may be taken for granted that both affections may be started by one and the same infection, and in accordance with this he assumes the affinity of these two forms of exanthem, a view directly in opposition to that of most recent authors.

Bolze ('Arch. f. Derm.,' i, 318) gives the following case:—A boy, æt. 9, was attacked with varicella and nursed by his sister, who was far advanced in pregnancy. Eight days later she gave birth to a child covered with papules of smallpox. The disease was fully developed, and the child died, the mother remaining free throughout. In a note to this case Pick quotes a case of congenital variola in triplets (three boys), the mother, at the time of their birth, being in the decrustation stage of smallpox. One child came into the world dead and somewhat macerated; the two others presented an eruption corresponding to that of smallpox about the sixth or seventh day; one died after a few hours, the other lived two days.

Güntz, "Ein Beweiss dafür, dass Variolois und Varicella verschiedene Krankheiten sind," 'Arch. f. Derm.,' i, 633; Greene, "Case of Varicella in an Adult," 'Brit. Med. Journ.,' 1870, i, 569.

Vaccinia.

Numerous papers will be found on this subject in the 'Gaz. des Hôp.' and the other French journals, more especially with regard to the discussions on vaccine in the Imperial Academy of Medicine.

Melsem ('Arch. Gén. de Méd.,' 1870, ii, 242) shows from his experiments that cold, about 80° C. below zero, does not destroy the vitality or the specific action of the vaccine virus.

Perroud, "De la Vaccine à Lyon en 1868," 'Lyon Méd.,' 1869, i, 522; Ballot, "Note on Vaccination in Holland," 'Med. Times and Gaz.,' 1869, ii, 570; Ballard, "On Animal Vaccination," ib., i, 611; Yarrow, "Erysipelas after Vaccination," ib., ii, 364; "Discussion sur la Vaccination Animale," 'Bull. de l'Acad. de Méd.,' xxxiv, p. 428, &c.; Depaul, "De la Syphilis Vaccinale," ib., 1017; Simonet, "Des Sources de la Contagion dans la Syphilis Vaccinale," 'Gaz. des Hôp.,' 1869, 514; Bourdais, "Syphilis Vaccinale," ib., 528; Seaton, "Animal Vaccination," 'Rep. Med. Off. Priv. Counc.,' 1869, p. 171.

Infection from Poison of Animals.

Two cases are given ('Gaz. des Hôp.,' 1870, 363) by Sebastiany of the symptoms caused by the bite * of the Scolopendra morsicans; one of

* The mandibles of the *Scolopendra* are terminated by a sharp hook, pierced for the transmission of the poisonous fluid.—A. B. S.

a child æt. 8 years, who was bitten in the little finger of the right hand, and entirely lost the second and third phalanges; the other of a man æt. 49, bitten a little below the elbow. The symptoms are said to resemble those of malignant pustule; engorgement and inflammation of the lymphatics of the poisoned limb, and (in these cases) of the axillary glands; precordial anxiety, articular pains, frequent and irregular pulse, dizziness, intense headache, and bilious vomiting. The local mischief appeared at first as a red spot, which gradually became larger and black in the centre, attaining, in the second case, to the size of a five-franc piece. The treatment consisted in the application of compresses dipped in a strong decoction of fresh walnut leaves, carbolic acid in one-gramme doses, and two grammes of chloral in a draught of 140 grammes.

Thompson ('Brit. Med. Journ.,' 1869, i, 374) contributes three cases of death from bee-stings; the longest time between the sting and its fatal result was only fifteen minutes.

Gihon, "Case of Death from the Bite of an unknown Venomous Insect," 'Amer. Journ. of Med. Sci.,' lvii, 387; Frantzius, "Vergiftete Wunden bei Thieren und Menschen durch den Biss der in Costarica vorkommenden Minirspinne (Mygale)," 'Virch. Archiv,' xlvii, 235; "Halford's Treatment of Snake-bites," 'Med. Times and Gaz.,' 1869, i, 122, 227; Mitchell, "The Venom of Serpents," ib., 137; Fayrer, "On the Action of the Cobra Poison," 'Edinb. Med. Journ.,' xiv, 522, &c., xv, 236, &c.; Viaud-Grand-Marais, 'Description de la Maladie produite par l'inoculation du Venin de la Vipère," 'Gaz. des Hôp.,' 1869, 186.

Pellagra.

Fränkel ('Virch. Arch.,' xliv, 579) publishes two cases of pellagra, with details of the autopsies. The general fatty degeneration or simple atrophy of the viscera met with in these cases he ascribes to the patients eating mouldy maize, and quotes experiments carried out by Prof. Lombroso, who produced the symptoms of pellagra in 17 out of 28 men and women to whom he administered a tincture of maize-mould. He gives (ib., xlvii, 511) three fatal cases of the disease, two with mania (all Italian). In each was found extreme fatty degeneration of the heart, and fatty liver, and in two of them fatty kidneys. Also numerous fat-cells in the walls of the cerebral capillaries, with masses of yellow pigment. Further (ib. li, 150), he communicates the statistical results arrived at by Lombroso in 59 cases, in 27 of which the organs were microscopically examined. Fatty degeneration of the liver and kidneys was very frequent; "brown" (granular) degeneration of the fibres of the heart still more so. Ulceration, hyperæmia, or ecchymoses of the intestinal mucous membrane was almost universal, sometimes with atrophy of the muscular coat. The skin, heart, cerebral capillaries, sympathetic ganglia, &c., were frequently the seat of deposits of pigment. The supra-renal bodies were not examined.

Cambieri, "La pellagra nel paese di Villanterio," 'Gaz. Med. Ital., Lomb.,' 1869, 221; Lombroso, "Esperienze per lo studio della eziologia e profilassi della pellagra," ib., 308; Marenghi, "Cura di alcuni pellagrosi coll'acido arsenioso in contado," ib., 337; Peroni, "Storia di tre pellagrosi curati in contado coll'acido arsenioso," ib. 419.

Leuchæmia.

Mosler ('Berl. Klin. Woch.,' 1869, 357) showed to the Medical Society at Greifswald a patient, æt. 35 years, with very advanced leuchæmia lienalis. The enormous enlargement of the spleen, as well as the disease generally, could be traced back to a very obstinate intermittent fever, lasting for several years. An interesting fact was the occurrence at the same time of wasting paralysis of the lower extremities. The patient was very exhausted from profuse epistaxis, hæmoptysis, and sweating. Mosler proposed to try transfusion.

Béhier contributes ('L'Union Méd.,' 1869, viii, 267) an interesting case of leuchæmia in a man æt. 25, who had been perfectly healthy up to April, 1868; from this time he became rapidly weaker, without any symptoms, except palpitation and dyspnœa on exertion, up to the time of his admission into hospital in July, when he was extremely pale and emaciated, with enlargement of the heart, but none of the spleen or glands. The blood was repeatedly examined, and found to be very deficient in red, and rich in white, corpuscles, the number of both being about equal. The general exhaustion increased, and he died on the fifth day after admission. The autopsy showed the spleen scarcely enlarged, reddish-white, and firm on section, but not lardaceous; no enlargement of inguinal or axillary glands; black pigmentation of the intestinal villi, and considerable swelling of Peyer's patches, which under the microscope presented great increase in the lymphoid elements of the tissue surrounding the several closed follicles which composed the patch. The same microscopical appearances were found in the solitary glands, the lesions thus entirely consisting of "lymphatic deposits, true lymphomata."

Bohn ('Deut. Arch.,' v, 429) describes a case of pseudo-leuchæmia in a man of fifty-six, the glands on both sides of whose neck became greatly swollen in consequence of repeated (febrile) attacks of tonsillitis; the inguinal glands were affected in the same way, and the liver and spleen considerably increased in size. The tonsils were finally extirpated. The patient was attacked with pleurisy, with effusion on the right side, and during convalescence the swelling of the glands disappeared, that of the liver alone remaining. Suddenly he completely lost his appetite, sank, and died at last of a peritonitis, set up by no cause that could be recognised, and rather slow in its course. The examination of the blood showed no increase in the white blood-cells. At the autopsy the following appearances were found: beside the pleurisy, about twenty-five pints of clear, yellowish-red fluid, poor in fibrin, in the abdomen; liver enormously enlarged, especially the right lobe, intensely nutmeg, beset with numerous, microscopic points of lymphatic new growth. The spleen, twice its normal size, everywhere adherent, appeared simply hypertrophied. The intestines were glued together by fibrin-clots; the serous membrane covering them and the liver presented countless whitish-grey nodules, made up throughout of lymphatic elements. The glands behind the peritoneum were considerably en-

larged, medullary on section, and showing lymphatic hyperplasia. Of the peripheral glands those below Poupart's ligament alone were somewhat enlarged by the proliferation of lymph-cells. There was no increase of white cells in the blood of the corpse.

Payne gives ('Path. Soc. Trans.,' xix, 401) a case of somewhat the same kind in a boy æt. 18, who, always delicate, had suffered for three months from dull aching pain in the lower part of the abdomen. On admission into St. Mary's Hospital a tumour, not itself the seat of pain, was found in the left iliac region, extending from the anterior superior iliac process to the middle line, and for about two inches upwards from Poupart's ligament. The left leg became swollen, the skin and conjunctivæ yellow, a systolic murmur was heard at the heart's apex; on one occasion there was copious epistaxis. The pain, after a short intermission, became more severe, and the patient died, emaciated and comatose, seven weeks after admission. The blood was not examined. The tumour after death was found to consist of enlarged and adherent lymphatic glands, reaching from the left inguinal region almost to the pancreas; the largest mass, about two inches in diameter, was connected in the groin with other masses surrounding the external and common iliac artery and vein of the left side, the aorta and inferior vena cava, and others in connection with the liver, pancreas, and spleen. Under the microscope were found the peculiar polymorphous cells described by Virchow in tuberculosis of the lymphatic glands and large-celled lympho-sarcoma—fibro-nucleated tissue and amorphous, perhaps albuminous material, giving no distinctive coloration with iodine.

Isambert ('L'Union Méd.,' 1869, viii, 38) records also a case of pseudo-leuchæmia; large glandular swellings in the cervical and axillary regions in a man æt. 55, with increasing cachexia which gradually became fatal. There was at first no increase in the white cells, but two days before death there were found two or three white to 100 red cells (some increase had been noticed a fortnight before). The autopsy showed simple hypertrophy of all the glands and spleen.

Eberth ("Ein Fall von Adenie (Pseudoleukämie)," 'Virch. Arch.,' xlix, 63) publishes a case of adenoid tumour of the stomach, liver, and kidneys in a child 9½ years old, always feeble and "scrofulous," and constipated. At the end of April, 1868, the patient suffered from a febrile attack with pain in limbs, and swelling and bleeding of the mucous membrane of mouth and pharynx, without any trace of diphtheritic deposit. On May 5 the face became œdematous, and there was a bloody mucous discharge from the nostrils, and swelling of the parotid. On the 8th the pulse was 140, there were ecchymoses on the chest; the child became delirious, and died on the 9th. At the autopsy the brain was normal; the pleura and pericardium much ecchymosed, and the lungs congested posteriorly. The thymus was large, and weighed 26½ grammes. Both kidneys were large, with numerous flat nodules, about the size of peas or beans, one three times, another four times the size of a cherry, beside very numerous and apparently similar, but only lenticular, deposits, all of them white and medullary, some injected. Several very similar small nodules and four large (1·5 cm.) ones were

found in the liver, which was pale, but otherwise healthy. The spleen was large, with its Malpighian corpuscles increased in size, but there was nothing abnormal, as the microscope showed, either in it or in the thymus; the stomach presented several nodules of the same kind, of the size of peas. All alike consisted, microscopically, of lymph-cells in a finely granular stroma. The lymph-glands were but slightly enlarged; the white and red blood-cells were remarkably diminished.

Moss ('Statistical Report of Health of Navy for 1868,' App. ii) is convinced, from the observations of a few years, that in the navy, at least, an increase of the colourless blood-corpuscles is a frequent accompaniment of certain disordered states of health, arising apparently from rapid change of climate, and declaring themselves after unusual exposure to fatigue; that it is neither a mere leucocytosis, nor has it the fatal character or absolute permanence of leucocythæmia; that it is accompanied by enlargement and induration of lymphatic inguinal glands (Virchow's 'Lymphatic Leuchæmia').

Caton ('Brit. Med. Journ.,' 1870, ii, 188) gives a case, with autopsy, of general enlargement of the lymphatic glands, and temperature of 102°—103°, in a boy æt. 8 years.

Hofman ('Wien. Med. Woch.,' 1870, 984) gives minute analyses, with tables, of the urine in a case of splenic leucocythæmia in a man æt. 30, the symptoms of whose disease he gives. He measured not only the urea and uric acid, but all other elements of the urine. His conclusions are:—(1) the colouring matter is increased, either from greater destruction of the red-cells, or from an abnormal derivative of the colouring matter of the blood, itself having strong colouring capacity.

(2) The whole amount of the phosphates is considerably diminished, those of the alkalies more than the earthy phosphates.

(3) The quantity of the excreted chlorine, sulphuric acid, and creatin undergoes no change.

(4) In contrast to numerous other cases, in which the diminution of urea was very great, in this there was no decrease.

(5) The urid acid is increased absolutely in proportion to the urea.

(6) Ranke's view that the diminution of urea cannot be completely accounted for by the increase of uric acid, seems entirely confirmed by this case.

(7) The increase in uric acid does not depend on a febrile condition of body.

(8) The normal quantity of urea appears to correspond with the view that the diminished oxidation is the cause of incomplete decomposition of the uric acid, and so its increased excretion.

(9) It is impossible to recognise with any certainty the presence of hypoxanthin, though lactic acid and albumen are met with, the last probably due to irritation of the kidneys by the uric acid.

Salkowski ('Virch. Arch.,' l, 174) details especially his researches on the urine in leuchæmia. He finds the uric acid increased, but, following up the observations of Scherer and others, he concludes that though hypoxanthin or a product closely resembling it may occur in the urine of patients suffering from this affection, it may also be found in health, so that its presence is of no diagnostic value.

Thürn, "Zur Kenntniss der Leukämie und Pseudoleukämie," 'Berl. Klin. Woch.,' 1870, 430; Reichardt, "Blut und Harn bei Lenkämie," 'Centralblatt,' 1870, 708; Reincke, "Ein Fall von Leukämie," 'Virch. Arch. li, 399; Pettenkofer and Voit, "Ueber den Stoffverbrauch bei einem Leukämischen Manne," 'Zeit. f. Biol.,' v, 319; Neumann, "Ein Fall von Leukämie mit Erkrankung des Knochenmarkes," 'Arch. f. Heilk.,' xi, 1; Wade, "Leucocythæmia in Disease of the Spleen," 'Brit. Med. Journ.,' 1869, i, 154; ib., ii, 644; Roberts, "Case of Leucocythæmia," ib., ii, 585; Paterson, "Acute Leucocythæmia in Pregnant Women," ib., 1870, i, 577; Turner, "Case of Multiple Lymphoid Tumour within the Abdominal Cavity," 'St. Barth. Hosp. Rep.,' 1870, 117.

*Morbus Addisonii.**

In a very elaborate paper on the pathology of morbus Addisonii ('Deut. Archiv f. Klin. Med.,' vii, s. 34), Risel, of Halle, analyses the published cases of the disease, reports most carefully three others compared with two, almost as fully reported, older cases, together with their post-mortem results, and draws the following conclusions:—The results of extirpation of the supra-renal bodies, and the course of numerous cases in which they were diseased, prove that in man they may be destroyed, so long as the ordinary pathological limits are not overpassed, not only without any evil effect on the general system, but often without any symptoms. The set of symptoms described as morbus Addisonii is dependent on an affection of the nerves in the neighbourhood of the cœliac axis, the cœliac plexus, and semilunar ganglia, and probably the superior mesenteric plexus as well; the affection being set up by secondary processes in the supra-renal bodies, and almost exclusively by tuberculous inflammation in them, this secondary inflammation serving as the medium between the affection of the bodies and that of the sympathetic. Disease of the cœliac plexus occurs independently of mischief to the supra-renal bodies in affections of other organs (case of "Bronzeskin in Disease of the Pancreas," Bell and Fletcher, 'Med. Ass. Journ.,' 1857, No. 45), and perhaps, also, spontaneously (case of Köhler's, 'Würtemb. Corresp. Bl.,' 1862, Nos. 12 and 13). As far as is known, the affection of the sympathetic depends upon an inflammatory increase in the nerve-fibres and ganglion-cells of the surrounding connective tissue, and the changes resulting, in consequence, in the sympathetic itself and its nervous elements. The only conceivable possibility of recovery in morbus Addisonii would be a retrogressive metamorphosis of the products of inflammation, and a return to the normal state, before the nervous elements have taken any essential and active participation in the process. The affection of the sympathetic is manifested by a paralysis of its vaso-motor fibres, which causes excessive accumulation of blood in the abdominal vessels, and a corresponding emptiness of all parts of the circulatory system outside of the latter. This abnormal blood-distribution causes phenomena more or less resembling those observed in collapse and in anæmia of the nervous centres. The early symptoms of anæmia of the brain are pro-

* Two things especially are noticeable in the cases abstracted: the connection of morbus Addisonii with intermittent fever, and the increase of connective tissue in the nerve-substance.—A. B. S.

bably obscured by the previous development of a secondary and but little understood blood-alteration, which very probably causes the bronzing of the skin. By far the majority of cases of morbus Addisonii, judging from their generally chronic course, are complicated with diseases of other organs, which, according to their importance, may occasion essential variations in the course, and post-mortem appearances, of individual cases.

Wolff ('Berl. Klin. Wochensch.,' 1869, 173, &c.) publishes three cases of the disease. The first occurred in a merchant's apprentice, æt. 18, who, in June, 1868, had suffered from various gastric disturbances, and was admitted into hospital in October, so weak as to be unable to leave his bed. His skin presented a general brownish coloration, in which two sorts of pigment-stains were noticeable—very dark brown, almost black, nævus-like spots from the size of a pin's head to that of a lentil, and blotches broader than these, which, from their size, colour, and frequently irregular outline, might have been taken for freckles. On the buttocks and elbows the pigment had a smoky appearance; the part of the skin corresponding to the hair follicles were less coloured than the interlying spaces, so that it presented a somewhat reticular arrangement. Yellowish-brown pigment-spots were visible on the conjunctiva, and mucous membrane of the mouth. The general symptoms pointed to supra-renal disease; in January, 1869, he was attacked with irregular intermittent fever, and died four days later with severe nervous symptoms.

The post-mortem appearances and microscopic examination of the skin are given very fully. Several peribronchial deposits in the lungs; both suprarenal bodies at least three times their normal size, irregularly nodular, and very firm. On section they appeared knotty, the several knots surrounded by thick connective tissue, more or less cheesy. The nerves of the solar plexus, the semilunar ganglia, and their nerve-branches running to the supra-renal bodies were enveloped in thick and tough connective tissue. Several nerves of the solar plexus presented ampulliform swellings before their entrance into the corresponding semilunar ganglia. Microscopically both supra-renal bodies and semilunar ganglia showed great increase in the connective-tissue elements. The convulsions which sometimes occur in the course of morbus Addisonii Wolff refers to a paralysis of the vessels of the brain, analogous to cases of vasomotor epilepsy.

The second case was that of a man in whom a large abdominal hydatid cyst, the exact position of which was doubtful during life, was evacuated by puncture in 1866, a fistula remaining. In 1868 was first noticed a dark colouration of face and forehead, contrasting strongly with the pale conjunctivæ and mucous membrane of the mouth. All the general symptoms of morbus Addisonii were present, and though the patient seemed somewhat to improve after a large incision for the exit of the pus had been made, the vomiting and diarrhœa returned, and he died of exhaustion in Feb. 1869. *Autopsy.*—Pleuritic adhesions on both sides, in which lay several old tubercles; several peribronchial deposits in both lungs; spleen and liver enlarged, amyloid, the latter beset with new lymphatic growths, from the size of a lentil to that of a pea. The same

growths were present in the right kidney, which was also amyloid. The right supra-renal capsule was normal. The left kidney was smaller than the right, with extensive hydronephrosis. In the largely developed fatty tunic of the kidney the echinococcus-sac had grown in such a way as nowhere to touch its surface. The connective tissue sac, in which the brood-sac had established itself, was shrunk to a canal of eight centimeters in length, and of the same size at its broadest part. There was no trace of echinococci. The left supra-renal body was four times its normal size; its tissue on section the colour of smoked salmon, firm, without any distinction of the three layers, and broken up by islands and processes of the connective-tissue septa, given off from the capsule. Under the microscope all its arteries had undergone amyloid degeneration. From the circumstances of the case Wolff believes that the amyloid affection of the left supra-renal body was developed after interstitial changes had already taken place in it.

The third case, still alive: a journeyman joiner, æt. 20, who had suffered from intermittent fever about his sixth or seventh year, and since then had been changing in colour. Just before his admission he had been attacked with febrile symptoms, which latter gave way to nervous symptoms, and the general characteristics of morbus Addisonii. Wolff looks upon the fever as due to some nervous origin.

Sohet ('Presse Méd. Belge,' 1870, p. 165) records a case of morbus Addisonii in a man, æt. 39, who had suffered from intermittent fever. After death were found enlarged spleen, pulmonary tubercle, and fatty atrophy of the supra-renal bodies. The blood contained pigmentary granules, and an increased number of white cells.

Kuhlmann ('Berl. Klin. Wochensch.,' 1869, 481) publishes the following:—A man, æt. 33, who had formerly had intermittent fever, had, during the hot summer of 1867, worked in the sun, and complained later of exhaustion and headache. He noticed that the skin of his face and hands became more and more coloured, the colouration, which, according to Kuhlmann, was grey, extending to parts covered by his clothes, especially his neck and thighs; at the same time he complained of a dull pain in the loins, increased by pressure. The patient's strength gradually failed, and he died in high fever. The autopsy showed old indurations at the apex of the left lung, and disease of both supra-renal bodies. The left was shrunken, its tissue degenerated, medullary and cortical substance being indistinguishable. Here and there were several deposits the size of millet-seeds. The capsule of the right body was thickened and cartilaginous, its upper part adherent to the liver. On opening the capsule there escaped about six grammes of yellowish-white thin pus. The upper part of the body was eroded at the edges and contained pus, its tissues completely lost in a grey homogeneous mass resembling tubercle. The microscopic examination by Rindfleisch showed that the cheesy masses (knoten) had already destroyed the greater part of the body; in one place, however, enough altered parenchyma remained to allow the infiltration of the septa with small cells, in which the process began, to be accurately followed. The capsule was enormously thickened, and adhered to the neighbouring

organs. In these adhesions were found two stout nerve-trunks, which had partly undergone fatty degeneration.

In the case of an officer, published by De la Porte ('Presse Méd. Belge,' 1869, p, 231), who in his twenty-eighth year had suffered from weakness and anæmia, followed a year after by bronze colouration and general symptoms of morbus Addisonii, and who died seven months later of exhaustion, the right supra-renal body was found greatly enlarged and firmly adherent to the liver, encysted, and with purulent contents; the left was the size of a hen's egg, hard as cartilage, on section cheesy, with fibrous dissepiments; several small cheesy deposits in lungs.

In the case examined by Tigri, of Sienna ('Gaz. Med. Ital. Venez.,' 1870, p. 242, quoted in 'Lyon Méd.,' 1870, p. 141), the longitudinal and ganglionic cords of the great sympathetic were altered from cranium to coccyx, the ganglions and their branches considerably increased in size and abnormally red. This alteration was especially noticeable in the great splanchnic and solar plexus. The splanchnic nerve was larger than the pneumogastric. The left superior cervical ganglion was much larger than the right; it was prolonged downwards, and its neurilemma was hypertrophied. The inferior cervical and the first thoracic ganglia were almost double their normal size, and of a reddish-brown colour. Tigri regards as a consequence of this pathological state of the central nervous system the post-mortem appearances found, viz. the lesion of the supra-renal bodies and lymphatic glands, which presented interstitial hæmorrhages like ecchymoses, attested by the remains of the cruor sanguinis and red globules, and the presence of a yellow fatty matter, substituted, as it seemed, for normal tissue. He explains these interstitial hæmorrhages by a paralysis or paresis of the vaso-motor nerves. The bronze-colouration proves an excessive activity of the "chromatogenous apparatus" of the skin, caused by the abnormal state of the great sympathetic. This functional increase of activity may go on to interstitial hæmorrhage, the latter manifesting itself by the presence of yellow blood-residues, either amorphous or under the form of fatty vesicles. Peyer's patches and the solitary glands of the small intestine were hypertrophied; superficial ulceration existed in the mucous membrane—all due, according to Tigri, to the morbid state of the great abdominal sympathetic. The treacly (poisseux) state of the blood, its thickening, as well as the primary hæmorrhages of the nervous ganglia, are in favour of the treatment of Addison's disease by bleeding (!)

Marbais ('Presse Méd. Belge,' 1869, p. 245) gives the case of a girl, æt. 21, who had been getting weaker for two months before her admission, presented a brown colouration of face, neck, back, hands, &c., and died of exhaustion seven months later. Post-mortem were found "tuberculous" lungs (apices) and bronchial and mesenteric glands, brown colouration of labia and blotchy black pigmentation of vagina, right supra-renal body normal, the left the size of a pea, its cortical substance fibrous, and medullary substance destroyed (la cavité n'existe plus).

Rossbach ('Virch. Archiv,' l, 566, and li, 100) publishes a case which he calls morbus Addisonii, with scleroderma. The patient, a well-developed and robust woman, began to suffer at the end of the year

1866, at the age of sixty years, from sleeplessness and pain in the epigastrium, with loss of appetite, sickness, and gradually increasing anæmia, without emaciation. A little later the fingers of the right hand began to be painful, and became hard and insensible. The pain soon subsided, but the scleriasis spread to the hand and forearm, with loss of motion in the joints, anæsthesia, and thickening of the skin, while the other tissues wasted. At the same time a dark colour gradually invaded the hands, arms, and face, continuous in some places, and maculated in others; and severe pains, "like those of zona" (neuralgic), were felt in the thorax and other parts. In April, 1867, the scleriasis had spread to the trunk, the melasma had increased, and anæmia, anorexia, and insomnia were extreme. No sweat was secreted, and the patient's restlessness had become most distressing. All this time there were no signs of pyrexia, and the internal organs were apparently healthy. In July the use of sulphur baths restored portions of the sclerodermic parts to their normal character, and brought on perspiration. With the advancing anæmia and melasma severe pains in the back, vomiting, salivation, albuminuria, and diarrhœa successively appeared, and death followed in the middle of September, after about eleven months' illness.

At the autopsy the body was not emaciated; the face, arms, and trunk were of a dark "yellow-brown" colour, in spots or in patches, and continuous; the mucous membrane of the mouth was also slightly coloured. The scleriasis chiefly affected the hands, forearms, and thighs. There was evidence of recent right pleurisy, bronchitis, and limited pneumonia; the lungs very free from pigment; the heart dilated, and in a state of fatty degeneration; fluid in the pericardium and peritoneum; stomach dilated. Both supra-renal capsules normal in every respect; brain, kidneys, &c., practically healthy (the spinal cord appears to have been forgotten). The solar plexus and sympathetic generally were examined microscopically, as were also the supra-renal capsules, and found apparently quite healthy.

An elaborate microscopical examination of the skin showed that the pigment was deposited partly in the rete mucosum, but chiefly in the papillary layer of the cutis,* either in the normal cells of these tissues or in separate masses. It contained no iron, nor was it deposited according to the distribution of the capillaries. At one place the papillæ were much hypertrophied, and here, as well as in other dark spots, there were numerous birds'-nest growths (Zwiebelartige Gebilde) found in the deeper layers of the epidermis, as well as horny cells like those of the superficial layer. No account of the sebaceous follicles or sudariparous glands is given. In the skin affected with scleriasis all that could be discovered was hypertrophy of the normal fibrous tissue of the corium, with atrophy of the subjacent fat. The elastic fibres of the cutis were somewhat increased in number, and its muscular fibres very much so.

In a lengthy discussion on the case the author, while admitting that

* Cf. the account given by Rindfleisch, quoted in a review of Neumann's "Hautkrankheiten" ('Brit. For. Med.-Chir. Rev.,' June, 1870.)

deposit of pigment often accompanies scleriasis, argues that the extent and character of the discoloration and its connection with the other well-known signs described by Addison and subsequent observers, prove that morbus Addisonii, as a clinical combination of symptoms, may be associated with healthy suprarenal bodies and sympathetic. The cause of the symptoms he finds in depression, trouble, or other mental affection, acting on the formation of pigment, and setting up the anæmia, pain, muscular weakness, &c. The disorder is only, he thinks, connected with an affection of the supra-renal bodies, in the same way as hysteria may be with organic disease of the uterus; and he would define morbus Addisonii to be a neurosis or functional disturbance of the entire nervous system.

Hertz ('Virch. Arch.,' xlix, s. 4) publishes a case of advanced degeneration of the supra-renal bodies without bronzing of the skin, in a man æt. 68, who had caught cold, and suffered from quartan ague, cough, and diarrhœa. Admitted into hospital in May, 1869. He was pale; his temperature was normal; his pulse small and soft, moderately frequent; urine normal, slight dulness of right apex, pains in back and limbs, but no paralysis; worn with fever, precordial pains and vomiting, he died in a state of collapse a week after admission. At the autopsy, the body was not emaciated; rigor mortis strong; no discoloration of skin or mucous membrane, except from dirt and a few ecchymoses. Vessels and nerves of brain normal; serum in subarachnoid space of cord; the latter and its dura mater finely injected and œdematous; the microscope showed nothing abnormal. The lungs, pleuræ, and pericardium were normal, except for some emphysema, and slight old pleuritic adhesions. Ecchymoses existed on the surface of the heart and among its muscular fibres, which were to some extent in a state of fatty degeneration; the heart was otherwise normal. The rete Malpighii was normal, without pigment; there was no ascites. The peritoneum, stomach, and intestines were healthy, excepting slight injection of jejunum and ileum, with swollen solitary follicles and mesenteric glands; but no tubercle or ulceration. The kidneys were healthy; there was no increase in the white blood-cells. The right supra-renal body was $4\frac{1}{2}$ cm. long by 3 broad and 2 thick; the left was 5 cm. by 4 and 3. On section they consisted of a firm, dense, gristly, whitish, homogeneous substance, in which were scattered numerous yellow deposits, some firm, some softened, some reaching the size of peas: one was calcareous. There was no distinction between cortical and medullary substance.

The solar plexus was enclosed in very red dense fibrous tissue; this was made up of connective fibres and oval or spindle-cells. The nerve-fibres were normal, the ganglion-cells full of granular pigment, but no oil-globules (so Bartsch, 'De Morbo Addisonii,' 1867, p. 24, only he looked upon them as fat). Hardened sections showed the homogeneous substance to consist of dense connective-tissue fibres, and corpuscles (fusiform and stellate), with some scattered round or oval, shining, gelatinous (colloidartig) bodies, a number of cells about ·012 mm. precisely resembling Recklinghausen's migratory cells, and free nuclei. Some of the normal loculi of the organ with the contained corpuscles were found here and there, but several contained as well colloid masses

and migratory cells, besides capsular cells. The yellow nodules showed at their periphery traces of fibrous stroma and normal cells, but towards the centre these disappeared and were replaced by round and fusiform cells, the latter like lymph corpuscles, and both in a state of fatty degeneration, colloid masses and free oil-globules. The author thinks that these round lymphoid cells were congealed white blood-corpuscles, and that from them the fusiform ones were formed, while the normal cells, by a process of chronic inflammation, partly atrophied, partly underwent colloid and fatty degeneration.

In commenting on the case, he observes that there was here loss of flesh, great depression, both mental and bodily, muscular weakness, sense of pain and oppression, especially at epigastrium, vomiting, constipation, and anæmia—all the clinical features and post-mortem conditions of Addison's disease, without the melasma.

The main changes agree with those generally found, *e. g.*, Wilson, Fox, and Bruce, 'Path. Trans.,' xvii, 401, except that the latter only mention the fibrous tissue with nuclei and the caseous degeneration, without finding colloid masses or migratory cells.

Numerous cases may be found in 'Path. Soc. Trans.,' xix, 406, &c.; Silver ('Lancet, 1870, ii, 818), calcified supra-renal capsules in man æt. 34: usual symptoms, sudden death, calcifications in lung apices; Legroux ('Gaz. des Hôp.,' 1869, p. 196), ordinary case without autopsy; Clarke ('Lancet,' 1869, ii, 336), ordinary case in which the supra-renal bodies were of immense size and yellow colour; and another probable case: no state of nerves mentioned; Greenhow (ib., 772) exhibited to the clinical society a woman, æt. 30, in whom, "as in three recorded instances, an injury seems to be the starting-point of the disease;" Heslop (ib., 1870, i, 800), case in which, though the microscope does not seem to have been employed for their examination, 'a careful dissection failed to reveal any abnormality of the sympathetic nerves and their ganglia in the abdomen;" Houghton (ib., 1870, ii, 119); Herman, 'Wien. Med. Presse,' 1869, 3, "Tuberculosis" of the Capsules; Bristowe, "Case of Addison's Disease," 'Brit. Med. Journ.,' 1869, ii, 6; Gordon, 'Med. Times and Gaz.,' 1870, i, 281; Power, "Case without Bronzing," 'Lancet,' 1869, ii, 801; and cf. ib., 1870, i, 255.

Alcoholism.

Hemey ('Gaz. des Hôp.,' 1870, 109) gives a report of a somewhat rare case, occurring in the practice of Gallard, of cerebro-spinal meningitis in chronic alcoholism. A baker, æt. 27, with well-marked alcoholic antecedents, had for about six weeks presented slight intellectual derangement. On May 13, 1870, he was thoroughly ill, complained of pains in the head, and without any furious delirium, convulsions, trembling, or sweats, became comatose on the 23rd. Hemiplegia of the right side followed almost immediately, became complete, and was succeeded by paralysis of the left side next day. On the 26th the patient died, without recovering from the coma, or presenting any other symptoms worth notice. At the autopsy, the lungs were found to contain small blackish nodules, or hard grains, on the average of the size of a hempseed, situated in the cellular tissue, which showed, under the microscope, a great number of fibrous filaments interlaced, and containing a very large quantity of blood-cells. The heart was fatty, the sig-

moid and mitral valves thickened; the stomach presented numerous ecchymoses and small ulcerations, and its mucous membrane, as well as that of the intestines, was congested; there was also commencing cirrhosis of liver, hypertrophied spleen, and increase in size of the closed follicles of the intestine. The examination of the nervous system showed the meninges of the cerebrum and spine thickened and congested, with islets of clear, yellow, purulent matter scattered here and there throughout, from the size of a lentil to a franc-piece, situated apparently between the arachnoid and dura mater, of the consistence of soft false-membrane, and showing under the microscope fibrinous elements and pus globules—general cerebro-spinal meningitis.

Prud'homme (ib., 261) publishes a case of the same kind. A notorious drunkard, æt. 33, had had frequent fits of delirium tremens; on admission he stuttered, could not answer, or tell his name, and his hands were affected with alcoholic tremor. He died on the ninth day afterwards, having had delirium and repeated hæmoptysis. The autopsy showed tubercular meningitis with circumscribed cerebral softening; miliary tubercles throughout the whole left lung, and, in a less degree, in the upper lobe of the right lung; commencing cirrhosis of liver, and granular kidneys.

Magnan and Bouchereau ('Gaz. Méd. de Paris,' 1869, 342) give a case of chronic alcoholism in a man æt. 58, accompanied by a subacute attack; epileptiform fits supervened after he had been placed in an asylum, and death occurred from apoplexy. The autopsy showed hæmorrhage with aneurismal dilatation of the vessels of the brain, and the same change in the veins of the retina; new membrane with some effusion of blood about the optic commissure; and the other organs in a state of fatty degeneration.

Bouchard and Proust (ib., 149) record the autopsy of an alcoholic subject in whom were found fatty liver, with commencing cirrhosis, nephritis, œdema of the lungs, lobular pneumonia, with hæmorrhagic spots corresponding to thrombosis of the pulmonary veins; grey miliary granulations on the peritoneum, with slight adhesions of its two layers.

Dupuy ('Gaz. des Hôp.,' 1869, 89) gives the case of an artisan, æt. 47, who had been in the habit of drinking in the course of the day about ten litres of wine, several cups of coffee, and considerable quantities of absinthe, brandy, &c. The symptoms were continued hiccup accompanied with nausea, anorexia, and burning thirst, prostration, anæsthesia, and death from collapse. The autopsy showed serous fluid in the arachnoid, very vascular pia mater with a few adhesions to the cortical substance of the right hemisphere; peri-encephalitis in the Sylvian fissure; anæmia and softening of cerebrum and cerebellum, with atrophy of the convolutions; hyperæmia and œdema of the lungs; hypertrophy and fatty degeneration of the liver and kidneys; greatly dilated stomach.

Lasègue "De l'Alcoolisme subaigu," 'Arch. Gén. de Méd., 1869, 513, 656, ii, 145; Bouley, "Alcoolisme aigu, &c.," ib., i, 628; Magnan, "Sur l'Alcoolisme, avec expériences Comparatives sur l'Action de l'Alcool et de l'Absinthe," 'Gaz. Med.,' 1869, 482; Langlet, "Conférences Cliniques sur les Maladies Mentales et Nerveuses, &c.," 'Gaz. des Hôp.,' 1869, 310, &c.; Hewitt, "Delirium Tremens treated by Capsicum, and subse-

quently by cold," 'Brit. Med. Journ.,' 1869, i, 146; Roberts, "Capsicum in Delirium Tremens," ib., 308; Chapman, "Case of Delirium Tremens successfully treated by Hydrate of Chloral," 'Med. Times and Gaz.,' ii, 419.

Progressive Muscular Atrophy.

Grimm ('Virch. Arch.,' xlviii, 445), after publishing a case of this disease in a farmer, æt. 45 years, in whom it had existed for two years, and at whose autopsy was found medullary cancer of the cord in the cervical region, with dilatation of the central canal, gives tables of 40 cases, which, with 60 published by Wachsmuth in 1855, present the following results:—56 males between the ages of eighteen and fifty-nine, 13 females between twenty-two and sixty-nine, and 7 boys between nine and fifteen, were affected, and there were 24 doubtful cases. The upper extremities were attacked in 51 cases, the lower in 16, the face in 2, the tongue in 3, and the trunk in 3. Pain was present in about half. Nine cases are said to have been hereditary (?); nearly half the number were ascribed to the effect of cold upon the surface of the body; the disease became certainly worse in 65, there was some improvement in 22, and recovery in 3. No autopsy was made in 78 cases; of the rest (22) the anterior, or posterior, or both columns of the cord were affected in 4. Dilatation of the central canal was found in 7.

With this paper may be compared Westphal's remarks (ib., 516) on the artificial production of degeneration of the cord; and Virchow's own observations (ib., 519), favouring the view of the cerebral origin of the disease.

Eulenberg (ib., xlix, 446) gives a case of the disease affecting both upper extremities, with Duchenne's paralysis (Lipomatosis musculorum luxurians) of both lower extremities, especially below the knee, in a woman æt. 44. The affection had lasted for nearly sixteen years, and had commenced, after a severe attack of ague, in the right arm, then attacking the left leg, and the other parts gradually, the right arm and left leg suffering most. No electrical excitability (by galvanism or faradisation) could be roused in the affected leg. Portions of muscle were harpooned out of both legs; from the right the muscular fibres were pretty healthy, fatty only in a few places, but some bundles were broader than usual; between them was abundant interstitial fatty growth. The portions from the left leg showed no muscular, but only ordinary adipose, tissue.

Dyce Brown publishes ('Edinb. Med. Journ.,' xv, 1079) a case of Duchenne's paralysis occurring in a man æt. 26. It affected the thighs, legs, abdominal muscles, and arms, in succession. The patient was still alive at the time of the report.

Haddon (ib., 1108) records a case of "acute muscular atrophy" in a gardener, æt. 21, who recovered under the exhibition of nitrate of silver.

Da Silva Lima ('L'Union Méd.,' 1869, viii, 797) used arsenic successfully in this disease in a man æt. 33, whose upper extremities were affected. The atrophy, well marked, was accompanied by pain,

tingling, trembling, &c., cramps in the legs, and loss of appetite and sleep. A table-spoonful of the following mixture was given three times a day:—Fowler's solution, 30 grammes; chloride of ammonium, 8 grammes; bichloride of mercury, 5 centigrammes; water, 375 grammes. After a continuation of this treatment for six weeks, combined (!) with nux vomica, or its alkaloid, cod-liver oil, and sea baths, his condition became greatly improved, and he was able in time to return to his work in an office, and to write with the greatest ease.

Diabetes.

Tscherinow ("Zur Lehre von dem Diabetes Mellitus," 'Virch. Arch.,' xlvii, 102) reviews the physiological doctrines of Bernard, Pavy, Meissner, MacDowell, Ritter, Roth, Kühne, Schiff, &c., and from his own experiments on dogs, rabbits, and fowls, tables of which are given, decides entirely against the theory of the first, and inclines to that of Pavy as to the function of the liver and the cause of diabetes. At all events, he thinks his own and previous experiments prove that glycogen, as such, is destroyed, not formed, in the liver. He quotes from Dr. Münch a case of the disease in a young woman in whom the liver-cells were found atrophied after death, and argues that this affection, at least when idiopathic, depends upon a diminution, not on an increase, of the liver function, which does not consist in the formation of glycogen or sugar, but rather the reverse. He even proposes to give to Pavy's "hepatin" the name "glycophthirium."

Leube ("Zur Pathologie und Therapie des Diabetes," 'Deut. Archiv.,' v, 372) gives the case of a labourer, æt. 31, who was affected with diabetes of moderate severity. A brother had died of the same disease. For four months the case was carefully watched to determine the influence of diet and treatment, and tables of curves are given which show graphically the following results:

1. The excretion of sugar is greater during the night (6 p.m.—6 a.m.) than during the day. The mean amount excreted in the twenty-four hours was 250 grammes—110 during the latter, 140 during the former period.

2. The increase in quantity of urine is directly proportional (parallel) to that of the sugar. These two results are the more striking, because the patient took food only in the daytime, and drank twice as much during the day as during the night.

3. By a comparison of the two curves, the percentage of sugar in the urine could scarcely vary. But as the lines do not absolutely coincide, this conclusion is not exact. Generally speaking, the mean amount of sugar in the urine is higher in the daytime than at night.

4. During the course of two intercurrent affections (a pleuro-pneumonia lasting eight days, and a rheumatismal diarrhœa) the quantity of urine and sugar was considerably diminished. During the diarrhœa the patient lost nine pounds in four days, and the extremely fluid stools gave, with Trommer's test, the reaction of sugar, a fact by no means common.

5. Under simple meat diet, with almond bread, the quantity of urine

and sugar was greatly diminished, but rose on any departure from the rule.

The employment of bicarbonate of soda and Carlsbad salts caused a still more rapid diminution in the amount of sugar; but arsenic had even greater influence, given in doses of one third of a gramme a day (Solut. Fowl. ♏ 30);* it caused the sugar to fall from 570 to 352 grammes in the day. This dose was borne by the patient for two months without any ill effect.

In a second case the same treatment for six weeks confirmed the favorable results obtained by the use of the drug.

Durand-Fardel ("Note sur la Pathogénie du Diabète," 'Bull. de l'Acad. de Méd.,' xxxiv, 229) attempts to throw further light on the question of diabetes by its comparison with two other conditions belonging, according to him, to the same pathological family, the uric acid diathesis, gout and gravel, and the fatty diathesis (diathèse graisseuse), obesity. He asserts that cases of the alliance, succession, or alternation of the three forms are continually found in practice; that diabetes makes its appearance especially in the fat; that obesity is almost always accompanied by the uric acid diathesis; and that gout and gravel are frequently combined with diabetes. The low temperature, the wasting, and the muscular atony of diabetic patients he attributes to the abnormal excretion of sugar; the anaphrodisia, amblyopia, &c., he considers as the result of a poisoning of the system, through the blood, by the sugar.

Balthazar Foster ('Journ. of Anat. and Phys.,' iii, 377) took carefully twice a day the temperature of four diabetic patients. He concludes—(1) That the temperature is always varying from one and a half to three degrees below the normal. In cases of recent origin it ranges between 96·5° and 97·5° F.; in more advanced cases it is nearly always below 97°, and occasionally as low as 94·5. (2) That the evening temperature is generally 5°—8° higher than that of the morning. (3) That there is no relation between the amount of sugar passed in twenty-four hours and the temperature. (4) That the occurrence of pulmonary and other complications produces an elevation of temperature only to a very limited extent.

Hoffman ('Centralbl.,' 1870, s. 417) gives a case of a man admitted under Hebra for pruritus, and presenting symptoms of diabetes insipidus, in whose urine, which was of a dark yellow colour, were found neither sugar nor uric acid, but, instead, a trifling sediment of needles, which were recognised under the microscope as hippuric acid. Without deciding whether the itching of the skin from which the patient suffered was due to the presence in the blood of hippuric acid, he advises that in all cases of pruritus cutaneus the urine should be examined, not only for albumen and sugar, but for other compounds, such as hippuric acid, xanthin, and kreatin.

Dompeling ('Arch. Gén. de Méd.,' 1869, i, May) translates from the Dutch a case of diabetes caused by a tumour (sarcoma fasciculatum) of the size of a nut, in the right half of the medulla oblongata, producing partial atrophy of the right vagus and spinal accessory nerves, partial

* 'The British Pharm.' gives gr. ½ in ♏ 30.

paralysis of the internal muscles of the right eye, and persistent diabetes, with death occurring in six years.

A somewhat rare case of recovery, in a diabetic patient, from a surgical operation is given by Demarquay ('Gaz. des Hôp.,' 1869, 152). A man, æt. 32, had phimosis, brought about by the urinary irritation. The necessary means were resorted to, and the wound healed by the first intention.

Schmitz ('Berl. Klin. Woch.,' 1869, 344) gives two cases in which he found favorable results from employing the spring at Neuenahr. The first was that of an elderly gentleman, who, before commencing the treatment, was passing 9000 cm. of urine in the twenty-four hours, having a sp. gr. of 1040, and containing 5·5 per cent. of sugar. He drank three times early in the morning 6 oz. of the spring water, the same quantity at 10 a.m. and at 5 p.m. This quantity was gradually increased, so that after three weeks he was taking 30 oz. before breakfast, 36 oz. at 10 a.m., and 30 oz. at 5 p.m. The diet was that generally employed in diabetes, a French roll for breakfast, and a glass of good old Bordeaux at his mid-day and evening meals. After about thirty-eight days of this treatment not a trace of sugar could be found, and the general symptoms were much improved; in eight weeks he increased in weight 15 lb. In the second case, a man, æt. 23, the sugar did not disappear altogether, but sank from 6 per cent. to 1·5 per cent.; the sp. gr. from 1040 to 1020; and there was an increase of body-weight of 4 lb.

Brouardel ('Gaz. des Hôp.,' 1869, 451) recommends Vichy and Carlsbad waters, but adds nothing new.

Basham ('Brit. Med. Journ.,' 1869, i, 323) gives four cases, in men whose ages ranged between 36 and 71, and in whom the general symptoms were diminished, the amount of sugar reduced, and the body-weight increased, by perseverance in the employment of alkalies, especially of ammonia and its phosphate, with a moderately restricted diet.

Day ('Lancet,' 1869, i, 396) treated a man, æt. 57, successfully with the ethereal solution of the peroxide of hydrogen; it was administered in drachm doses for three months, and in this time the quantity of urine passed fell from eleven to five pints, and the sp. gr. from 1045 to 1024. He increased 15 lb. in weight. No mention is made of the amount of sugar at any time.

Pavy (ib., ib., 538), in opposition to the last author (ib., 1868, i, 45), found both the aqueous and ethereal solutions of the peroxide without the slightest benefit. On the other hand ('Brit. Med. Journ.,' 1869, i, 36), he gives three cases in which opium was used with great success; the first, that of a woman æt. 68, seems to be vitiated to some extent by the administration, "by misunderstanding," of a draught containing bicarbonate of potash, ammonia, and calumba, alongside of the simple treatment (Cf. 'Guy's Hosp. Rep.,' xv, 420).

Dickinson ('Brit. Med. Journ.,' 1870, i, 219; 'Lancet,' 1870, i, 269) read before the Medical and Chirurgical Society a paper "On certain Morbid Changes in the Nervous System associated with Diabetes," in which he described the pathological appearances in

five cases. They consisted of dilatation of the arteries, followed by a degeneration of the nervous matter at certain points external to them, which occasions destruction and excavation of tissue around the vessels, thus producing cavities often large enough to be seen without the microscope, and containing blood-vessels, extravasated blood, pigment-granules, and the products of decayed nerve-substance, the contents ultimately becoming absorbed and leaving simple vacuities. These changes were found constantly with arteries, most developed in the medulla oblongata and pons, frequently in connection with folds of pia mater, and often laterally symmetrical. Spots uniformly affected in all the cases were the olivary bodies, the vicinity of the median plane of the medulla, the grey matter of the fourth ventricle, and in particular a spot just external to the origin of the facial nerve. In four out of the five another spot was found near the front of the pons, in the median line. The optic thalami and corpora striata were slightly involved; the septum, the white matter of the convolutions, and the corpus dentatum displayed the alterations in a remarkable manner. The white matter alone, with the exception of the grey matter in the floor of the fourth ventricle and of the spinal cord, was especially affected. The cervical and semilunar ganglia were normal; epithelial accumulation in the liver and kidneys was the only visceral change constantly found. He concludes that diabetes is essentially a disease of the nervous system.

Oppolzer, "Zur Pathologie und Therapie des Diabetes Mellitus," 'Allg. Wien. Med. Zeitung,' 1869, Nos. 50 and 51; Durand-Fardel, "Des indications thérapeutiques dans le Diabète," 'Gaz. Méd. de Paris,' 1869, No. 17; Donkin, "On a purely Milk Diet in the Treatment of Diabetes Mellitus," &c., 'Lancet,' 1869, ii, 538, &c., and 1870, i, 578, &c.; Thorne, "Treatment of Diabetes by Milk," ib., 1870, i, 285; Bourdon, "Polyurie simple avec Anthrax," 'Gaz. des Hôp.,' 1869, 297.

Gout.

Potton ('Lyon Méd.,' ii, 436) in a long treatise enlarges upon the very great advantages gained by gouty patients by the use of the baths of Baden in Switzerland. Their action is said to be tonic, resolvent, at the same time sedative rather than irritating. He lays great stress upon the certain results obtained in all complicated cases of gout, especially of the rheumatic character, in which Vichy water, useful in the simple affection, is said to fail entirely.

Falck ('Deut. Klin.,' 1869, No. 29) has seen very good results follow from the employment of carbonate of lithia, given in doses of one or more decigrammes every two hours.

Féréol ("Des rapports de la Goutte et du Rhumatisme;" 'L'Union Méd.,' 1869, vii, 827), gives two very complete autopsies of gouty patients, with minute descriptions of the affected joints.

Simon ('Gaz. des Hôp.,' 1869, 199), communicates a case of visceral gout (?) in a man, æt. 47, who died of pleurisy with effusion on the right side, but of whose body no examination was made.

"Treatment of Acute Gout at various London Hospitals," 'Lancet,' 1869, ii, 437; Moxon, "Gout in the Stomach," 'Brit. Med. Journ.,' 1870, ii, 473.

Rheumatism.

Gull and Sutton ('Med. Chir. Trans.,' lii, p. 43) bring forward a few more cases of rheumatic fever treated by mint water, or, in other words, by absolute rest and regular diet, unaided by medicine. The report is based on twenty-five cases of the disease, which were carefully watched. Of these eighteen were females and seven were men; their mean age was nineteen years; all were suffering from their first attack. On the average the temperature was 102° during the acute stage, and the total duration of the acute symptoms seventeen days. After inquiring into the duration of the disease, and the liability to heart affection, under the employment of different drugs, they hold that the good results attributed to the medicine given are really due to the natural course of the disease; they endeavour to show that when the heart is attacked, this takes place during the first week and very rarely afterwards; and they conclude that treatment should be limited to the following means: careful regimen; mechanical and physiological rest; regulation of temperature; moderating the excessive skin activity by sponging; allaying of pain, sometimes by opiates; sustaining nerve force, when necessary, by small doses of alcohol; in fine, a physiological state of mean rest of the nervous, circulatory, muscular, and digestive symptoms.

Dickinson ('Lancet,' 1869, i, 116) gives tables of 161 cases admitted into St. George's Hospital suffering from rheumatic fever, but without any heart affection at the time of admission. They are arranged according to treatment, chiefly with a view to ascertain the frequency of the heart complication under the different methods employed. This complication did arise in 36; in 12 during the first week; in 9 during the second; in 5 during the third; in 3 during the fourth; in 7 the date of the murmur was uncertain. Alkaline treatment, *i. e.*, an ounce to an ounce and a half daily of the carbonate and vegetable salts of potash and soda, was employed in 48 cases, 3 were treated with salts of ammonia, and 110 in various ways, by venesection, mercury, nitre, guaiacum, opium, and small doses of the alkalies. In the 48 cases affection of the heart was recorded only once; among the 3 treated with ammonia none; among the 110 variously treated 35. Thus the alkaline treatment gives a proportion of 1 in 48; the non-alkaline of more than 1 in 4. The duration of the disease was shorter under the former than under the latter plan of treatment. Dickinson gives the salts in doses of three or four scruples every two or three hours at the commencement of the affection, lessening the dose, "as the acid tendencies of the patient diminish."

Reynolds ('Brit. Med. Journ.,' 1869, ii, 649), after treating eight cases with Tinct. Ferri Perchlor., calls attention to the following points, though the number of cases is too small to allow of any general deduction: (1) The relief of the joint affection was definite, uniform, and speedy. In four cases it was removed in one day; the longest period of suffering after the commencement of the treatment was five days, and the mean duration of the joint affection two days. (2) Excluding

one fatal case with cerebral symptoms, aud another in which there was intercurrent pneumonia, the temperature became normal between the second and seventh days; the mean duration of pyrexia being a little less than five days and a half. (3) Excluding again the two exceptional cases, the total duration of the disease from the outset varied from seven to fifteen days, giving a mean of ten and a half days. (4) The earlier the iron was given, the shorter was the duration of the disease. (5) No headache or other symptoms of discomfort was produced by the iron.

Da Costa publishes in the 'Pennsylvanian Hosp. Reports' an account of 30 cases of acute rheumatism treated with bromide of ammonium in 15 to 20 gramme doses every three hours. Among these one case only of pericarditis occurred, and none of valvular lesion.

Oppert ('Med. Times and Gaz.,' 1869, i, 273) gives the history of a sempstress, æt. 19, in whom a moderately sharp articular rheumatism was complicated with pericarditis, and profuse hæmorrhage from the intestines and uterus, by which she lost, in the course of a week, over six pints of blood. Under the use of tinct. ferri perchlor. the hæmorrhage ceased, and the patient became ultimately well.

Sutton (ib., ii, 347) observes on the difficulty of diagnosis, in some cases, between pyæmia and rheumatic fever, and gives in full, with temperatures, the case of a servant girl, æt. 16, who presented for the first week at any rate the symptoms of the latter disease. Post-mortem was found the existence of pyæmia, starting probably from a deposit of pus, slough, &c., in the jejunum. He mentions a second case in which the same difficulty presented itself during life.

Desclaux ("De l'ascite rhumatismale," 'Bull. de l'Acad. de Méd.,' xxxiv, 420) records the cases of two females, æt. 50 and 60, who had suffered from acute articular rheumatism (?); one had general dropsy and ascites, the other only ascites. Both seem to have recovered under the use of quinine.

Roget ('Gaz. des Hôp.,' 1869, 220) gives the history of a healthy girl, æt. 5, who suffered from acute rheumatic fever, without heart affection, but who died in the second of two attacks of severe dyspnœa occurring in one day; the only thing found to account for death was a very large, hard, fibrinous, recent clot, filling up the right ventricle and auricle, and stopping at the orifice of the pulmonary artery. Another, but smaller clot, was contained in the left heart.

After a careful perusal of the literature on the subject, especially of the works of Roger and Tüngel, Ferber ("Die Nervösen Erscheinungen im Rheumatismus acutus," 'Arch. d. Heilk.,' x, 253) remarks that there is a want of truth in the general view that chorea, as a complication of acute rheumatism, is confined to childhood, and cerebral disturbance to adults. He concludes (1) that both occur in connection with this affection in all ages of life, more frequently, however, in children. (2) In children symptoms on the part of the motor system predominate, in adults of the emotional (psychical). In children chorea occurs mostly without emotional (psychical) mischief, while in adults cerebral disturbance is more frequently met with without chorea. Both the chorea and the cerebral disturbance make their appearance

sometimes in the acute stage of the rheumatism, and are frequently in direct relation with the onset and remission of the articular affection, in children especially the former, in adults the latter. Generally, however, the nervous symptoms make their first appearance after the rheumatism has abated. (3) In no case does the delirium show itself as a premonitory symptom of rheumatism, while in children chorea has frequently been observed to do this by Roger and Henoch. He gives a case of repeated attacks of rheumatism, in a boy æt. 8, since his second year, the last being accompanied by disturbance of the sensorium, chorea, and a contraction of the lower extremities, the latter occurring without any previous rheumatic affection of the hip-joint. The author thinks this contraction was due to mischief in the central nervous apparatus, perhaps a slight cerebro-spinal meningitis.

Simon, of Hamburg ('Ann. der Charité Krankenh.,' Bd. xv, s. 120), brings forward fresh cases of delirium, &c., in the course of acute articular rheumatism, and keeps to the view he held in a former number of this series (Bd. xiii, Heft. 2, 1865), that they depend on anæmia caused by disease of the heart, though some of course may be the direct result of alcohol or tubercular meningitis.

Murchison ('Lancet,' 1870, i, 724) gives a case of acute rheumatism in a carman, æt. 26, in which the temperature rose to 109·5° twenty minutes before death.

Wilson Fox (ib., ii, 7) records the history of a housemaid, æt. 30, who suffered from acute rheumatism with pericardial effusion, and whose temperature at midnight of the second day before her death rose rapidly to 107·8°, the patient being violently delirious; a full bleeding was tried without any good effect, the temperature rising in the next hour to 108·9°. She was then placed from time to time in a cold bath (60°), and the temperature fell; but unfortunately she died nearly thirty-six hours after the commencement of the treatment. Fox considers that the protraction of life for so long a time after the temperature had reached so high a point, was due to the cold bath.

Möller ('Berl. Klin. Woch.,' 1869, 134) gives an account of a case of so-called peliosis rheumatica, which clearly marks the connection of this affection with thrombosis, in a man æt. 46, who had suffered from acute articular rheumatism in the early part of 1868. In the spring a short systolic blowing murmur was heard over the origin of the aorta, without any disturbance of function, or enlargement of the heart. About the same time small hæmorrhagic spots appeared, off and on, with sudden increase of pain, on different parts of the skin of the extremities. Towards the end of the summer these appearances became more frequent, and extended to the deeper-lying parts; on the hands and feet especially were developed very suddenly hot, very painful, more or less red, circumscribed swellings, in the centre of which could be felt a hard hæmorrhagic knot, which, from its superficial position, shone with a bluish colour through. In October the right hand was attacked with paresis and painful dulness of feeling; the pulse had disappeared in the radial, and was almost gone in the ulnar artery; 1″—2″ below the aponeurosis of the biceps could be felt, deeply, a cord-like, very sensitive tumour. On Dec. 8, without any warning, the patient was

attacked with headache, delirium, and coma, and died in a few hours. Only the arm was examined, though Möller considers the fatal result due to embolism of a cerebral vessel. The brachial artery, just above its bifurcation, was converted into a solid cord, firmly blended with the surrounding connective tissue, in which were visible the remains of hæmatoid crystals.

Fairbank ('Med. Times and Gaz.,' 1869, ii, 506) describes a rash resembling that of scarlet fever, appearing in a man æt. 28, on the eleventh day of the acute stage of rheumatic fever; it was followed next day by an abundant crop of miliaria, which lasted for three or four days, and was accompanied by very great prostration; the treatment consisted of Vichy water and opium, which on the appearance of the eruption was changed to gentian and ammonia.

Virchow ('Archiv,' xlvii, 298) found well-marked arthritis deformans in several bones dug out of a monastery in Pomerania, especially in a humerus, in which both fossæ, particularly the posterior, were filled with osteophytes, and in a lumbar vertebra, the foramen of which was so narrowed that he thinks there must have been paraplegia (he draws attention to this cause of the latter affection, often overlooked from the way in which the spinal canal is opened); there was an axis also slightly affected. These bones must date between 1356, the foundation, and about 1550, the demolition of the monastery. Cf. his account of the bones from a Hun tomb in Pomerania ('Verhandlung der Berlin. Med.-Gesellsch.,' 1867, i, 272).

Hervez de Chegoin, "De la Goutte et du Rhumatisme," 'L'Union Méd.,' 1869, viii, 230; Oppolzer, "Ueber Rheumatismus," 'Wien. Med. Woch.,' 1869, No. 76; Adams, "Acute Rheumatic Affections of the Joints; their Pathology and Treatment," 'Med. Times and Gaz.,' 1869, i, 148; Peter, "Du Rhumatisme," 'Gaz. des Hôp.,' 1869, p. 29; Rigal, "Rhumatisme aigu à determinations successives et multiples," ib., p. 17; Mapother, "Blistering in Acute Rheumatism," 'Med. Press and Circular,' 1869, i, 457; Davies, "On the Blister Treatment of Acute Rheumatism," 'Lancet,' 1869, i, 190 Robinson, "Cases of Acute Rheumatism, treated principally by the Alkaline Method," ib., 810; Fleischmann, "Remarks on Rheumatism," ib., 598; Hayden, "Cases of Rheumatism," 'Brit. Med. Journ.,' 1869, i, 285; "The Treatment of Acute Rheumatism in different Hospitals," ib., 8, 27, &c.; Fuller, "The Alkaline Treatment of Rheumatic Fever," 'Practitioner,' ii, 130; Kennedy, "Remarks on the Treatment of Acute Rheumatic Fever," 'Brit. Med. Journ.,' 1869, i, 397—a summary of the views of several Irish physicians on the treatment of the disease will be found in the 'Dublin Quart. Journal,' xlvii, p. 431; Black, "Fatal Case of Acute Rheumatism," 'Lancet,' 1870, ii, 118; Barclay, "High Temperature of Two Fatal Cases of Acute Rheumatism," ib., 154; Bradbury, "Case of Acute Rheumatism, Endocarditis, Delirium, sudden fatal issue," ib., 148; Goodridge, "Case of Cerebral Complication of Acute Rheumatism," 'Brit. Med. Journ.,' 1869, i, 324.

Animal Parasites.

Walker ('Brit. Med. Journ.,' 1870, i, 151) records a case of parasitic disease in a female æt. 32, caused by the presence of the larva of *Œstrus bovis*.

Grenet, of Mayotte (Comores), and Davaine ("Note sur une Nouvelle Espèce de Tænia;' 'Arch. de Méd. Nav.," 1870, xiii, 134) describe a species of tænia, for which the latter suggests the name *Madagasca-*

riensis. Grenet had been twice called to see two young creoles, in whom death seemed imminent from convulsions, and who had at a later period passed portions of this cestode. One patient was a boy of eighteen months, from the Antilles; the other a girl of two years, from Réunion. The first proglottides are described as being asexual, the next in order containing the deferent canal and penis, with the genital pore situated unilaterally in the middle of the margin of each proglottis; those furthest from the head contained the female organs, indicated, in the upper proglottides by the vagina alone, and in the lower by a structure not to be found, according to Davaine, in any other tænia. Each of these last proglottides, as well as those which were free, contained from 120 to 150 bodies, which the microscope showed to be ovarian capsules, whose central portion was filled with from 300 to 400 eggs.

Currie ('Edinb. Med. Journ.,' xiv, 812) found twenty-four grains of the ethereal extract of male fern most successful in the treatment of tænia occurring among the troops of the Abyssinian expedition.

Lafitte ('Arch. Gén. de Méd.,' 1869, ii, 118) gives the following: a man, æt. 35, presented himself in April, 1869, with a tumour about the size of a pigeon's egg, situate in the palm of the right hand externally above the space occupied by the muscles of the thenar eminence. Incision allowed the escape of serous fluid and a small vesicle, to the inside of which was attached by its pedicle a cysticercus cellulosæ, the forerunner of tænia solium.

Huber ('Deut. Arch.,' vii, 450) insists that a very one-sided view has been taken in looking only at the mechanical irritation caused by the presence of intestinal worms, and recalls the fact that ten years ago he had drawn attention to the peculiar, strong smell of the round worms, and had suggested that the origin of many of the symptoms, especially the local ones, was to be sought for in the chemical constitution of this odorous matter. Miram, as mentioned by Von Siebold, had suffered from sneezing, increased flow of tears, with swelling and itching of the fingers, after examining specimens of *Ascaris megacephala;* and Huber gives the following as occurring to himself. In February, 1870, a factory-girl, æt. 20, died in hospital with symptoms of acute œdema of the lung. The day before, and the morning of the day of, her death, she had vomited six round worms (*Ascaris lumbricoides*). In addition to the lung-œdema found after death, there were about 20 round worms in the small intestine, in groups of 2—3 individuals, the greater portion females; the mucous membrane of the parts in which they lay was normal, but a short distance above the ileo-cæcal valve was a streak three inches long, strongly tinged with blood, the mucous membrane itself being covered with numerous ecchymoses from the size of a pin's head to a lentil, and loosened. Huber took a dozen of the worms home, and after spending an hour, after noon, in their examination, felt between 5 and 6 p.m., a troublesome itching of his head and neck, followed by large wheals on the latter, smaller ones on the forehead, swelling of and secretion from the right ear; headache on the right side; itching and catarrh of the conjunctivæ, and itching of the hands; all the symptoms disappearing without leaving a trace in a few hours.

The organ in which the irritating matter is formed cannot be certainly fixed upon.

Védié ('Gaz. des Hôp.,' 1870, 314) contributes the following: a man who had been admitted into the Asylum for Lunatics at Evreux, suffering from general paralysis, suddenly died in getting out of bed. At the autopsy, on cutting through the left bronchus about 2 cm. from the lung, in removing the latter there were found the pieces of a lumbricus (*Ascaris lumbricoides?*) which had been cut in two at the same time, about 15 cm. long and 3 mm. in diameter. The lungs presented the appearance of asphyxia.

Jacob ('Rev. Méd.,' 1870, i, 520) gives the case of an officer, æt. 40, who suffered from great gastric disturbance, with intermittent symptoms of fever, lasting five days, and ceasing on the expulsion of a lumbricus 12—15 cm. in length.

Petri gives ('Virch. Arch.,' xlv, 523) a table of all the pigs killed at Rostock from May to December, 1868; of 4052, five only were found to have trichinæ. Of 5457 killed in the same place in 1869 (ib., xlix, 456), one only was affected.

Virchow, "Eine Correspondenz über Trichinien," 'Virch. Arch.,' i, 451; Scherenberg, "Enormes Echinococcus des Netzes," ib., xlvi, 392; Boettcher, "Das oberflächliche Gefässystem des Bothriocephalus latus," ib., xlvii, 370; Hirschberg, 'Anatomische Untersuchung eines Augapfels mit subretinalen Cysticercus," ib., xlv, 509; Finsen, "Les Échinocoques en Island," 'Arch. Gén. de Méd.,' 1869, i, 23; Hjaltelin, "The Hydatid Disease in Iceland" (criticism of Finsen), 'Brit. Med. Journ.,' 1869, ii, 178; Barck, "Echinococcus-Cyste in der Bauchwand," 'Deut. Archiv,' vii, 614; Valentin, "Praktische Erfahrungen über die Abtreibung der Bandwürmer mit Benutzung des neueren, zu diesem Zweck, empfohlenen Mittel," 'Deut. Klin.,' 1869, 194; Küster, "Hydatid Cysts in Bone," 'Med. Centr. Zeit.,' April 22, 1870 (quoted in 'Lancet,' 1870, i, 737). Other cases will be found among diseases of the various organs.

It is impossible to find space for abstracts of papers bearing on the following general diseases:*

Scorbutus—Purpura.—Farr; "An Explanation of the cause of Scurvy, and the action of the different so-called Antiscorbutics;" 'Lancet,' 1869, i, 424. Tayler; "On the treatment of Scurvy by the binoxalate of Potash;" ib., 777. Cousins; "A case of the Hæmorrhagic Diathesis;" 'Med. Times and Gaz.,' 1869, ii, 277. Higginbotham; "Zwei Beobachtungen über Bluter;" 'Petersburg. Med. Zeitschr.,' xvi, 2.

Exopthalmic Goître.—Wilks; Three cases (one with autopsy) in 'Guy's Hosp. Reports,' 1870, xv, 17. Cheadle; "Exophthalmic Goître;" 'Lancet,' 1869, i, 845. Stellwag von Carion; "Ueber gewisse Innervationsstörung bei der Basedow'schen Krankheit.," 'Wien. Med. Woch.,' 1869, No. 44.

Epidemic Miliaria (Schweissfriesel; Suette).—Ferber; "Sporadischer Fall von idiopathischen Friesel;" 'Arch. d. Heilk.,' x, 335.

Maladie du Sommeil.—Guérin, 'Arch. Gén. de Méd.,' 1869, ii, 605.

Cerebro-spinal Meningitis.—Popham; "Case of Cerebro-spinal Fever (with autopsy);" 'Dublin Quart. Journ.,' xlvii, 480. Grimshaw;

* *Syphilis* will be found at the end of the "Report on Medicine."

"Cerebro-spinal Meningitis (case with autopsy);" ib. xlix, 481. Küttner; "Vortrag über Meningitis Cerebro-spinalis Epidemica;" 'Petersb. Med. Zeit.,' xvi, 53. Horschelmann; "Meningitis Cerebro-spinalis in der Krimm;" ib. xv, 265.

B. *Diseases of the Nervous System.*

Hysteria.

Guttmann ("Ein Seltener Fall von Hysterie.," 'Berl. Klin. Woch.,' 1869, 289) gives the following: a single, anæmic woman, æt. 38, had been struck with a stone on the left side of the forehead, at the age of twelve, and an inflammation of the brain ensued lasting six weeks. Since then she had suffered from chlorosis, and in her twenty-fourth year had symptoms of paralysis of the left side without anæsthesia, which continued ten years, and was very much benefited by the use of the continuous current. In May, 1865, she had pains in the scar on the forehead, then in the left side of the face and left arm, succeeded by a dull feeling. Nine months later the same occurred in the left leg, and developed gradually into a left-sided hemiplegia. The same pains and anæsthesia attacked the right side, commencing in the leg, then seizing the arm, and, lastly, the face. In addition to these disturbances, she had suffered for the last ten years from hysterical convulsions, at first daily, then several times in the day, later still recurring at longer intervals, and leaving her for six months. After excision of the scar on Dec. 4, 1867, sensation returned gradually to the right half of the body, but as the pain in the scar reappeared, resection of half an inch of the supra-orbital nerve was performed May 26, 1868, with consequent anæsthesia of the corresponding part of the forehead, but with continued pain in the scar. In February, 1869, she presented the following symptoms: complete paralysis of the left olfactory nerves; paresis of the optic and oculo-motor nerves on both sides, especially the right; complete paralysis of the nerves of taste (lingual and glosso-pharyngeal) on the left side, with diminished function of the right; loss of function in the motor portion of the left trigeminus, with complete anæsthesia of the parts supplied by the nerve on the same side; considerable alteration of the left auditory and facial, and paresis of the left hypoglossal; complete anæsthesia of the skin of the left half of the trunk and left extremities, with loss of motion in the latter. Anæsthesia of the mucous membrane of the mouth, pharynx, and vagina. Guttmann is inclined to place the seat of these numerous nerve-changes in the medulla oblongata, and more particularly in the portions of it which contain the terminations of the posterior cords, and the cell-origins of the sensory part of the trigeminal, the auditory, and glosso-pharyngeal; that the medulla alone was concerned is contradicted by the implication of the optic and left olfactory nerves.

Smeth ("Observation d'un cas d'hystérie chez l'homme;" 'Presse Méd. Belge,' 1869, 311) records the case of a merchant, æt. 32, of a nervous family, who after some emotion was twice seized with attacks of a nervous character, in which after a feeling of constriction about

the chest, he was subject to irresistible disordered movements, hitting out right and left, though perfectly conscious all the time, and free from any vertigo, nausea, or vomiting, the attacks ending in tears. Smeth decides against their having any epileptiform character, and puts them down to hysteria.

Dubard ("L'Hystérie et la Chorée, &c.," 'Gaz. des Hôp.,' 1869, 506) gives seven cases cured by bromide of potassium; Chairon, "Etude Clinique sur la Nature et la Co-ordination des Phénomenes Hystériques," 'Bull. de l'Acad. de Méd.,' xxxiv, 736; Russell, "A Fatal Case of Hysterical Paraplegia," 'Brit. Med. Journ.,' 1869, ii, 632; Ogle, "Clin. Lect. on a case of Hysteria," ib., 1870, ii, 57; Parsons, "Case of Hysterical Vomiting and Sleeplessness," ib., 137; Lee, "Inquiry into the Nature, Origin, and Treatment of Hysteric Disease," ib., 1870, i, 299.

Chorea.

Broadbent ('Brit. Med. Journ.,' 1869, i, 345, 369) supports Russell Reynolds, and Hughlings Jackson in the view that chorea is an affection of the corpora striata and optic thalami caused by embolism of their vessels; and attempts to establish that it is a symptom rather than a disease, and cannot be referred to any single pathological condition. He gives eleven cases, in four of which there was more or less distinctly marked right hemichorea, and in four left hemichorea; in two others right, and in one left, becoming general. The last case is the only fatal one: the autopsy showed scattered subpleural tubercles at both apices, large, yellow, nodulated supra-renal capsules, "exhibiting the changes characteristic of advanced Addison's disease," and a tumour of the size of a haricot bean on the posterior aspect of the dorsal part of the spinal cord, about two inches above the lumbar enlargement, consisting of nerve-fibres, connective-tissue, and vessels radiating from near the axis of the cord. The heart and brain were healthy. During life there had been sufficient browning of the skin to attract attention, but not enough to cause suspicion of Addison's disease. As to the conditions other than embolism, to which chorea is attributable, he conjectures—1. Local innutrition; 2. Reflex inhibitory influence from peripheral irritation; 3. Direct action upon the ganglia by shock, &c. (two cases are given, caused by fright). Holding that the one definite indication derived from its pathology is that the affection is one of innutrition, he thinks good is generally done by giving cod-liver oil and iron, and perhaps phosphorus or arsenic.

Tuckwell ('St. Barthol. Hosp. Rep.,' 1869, 86) gives some cases of chorea, with a critical review of the opinions of Kirkes, Hughlings Jackson, Broadbent, Barnes, and others. He concludes in favour of the embolic theory, and thinks that no drugs are of any good. As to the question of sex as influencing, or influenced by, the disease, he records the number of cases admitted into the Ormond Street Hospital with rheumatism from 1852 to 1868; of these there were 68 male and 78 female in-patients, and 158 male and 178 female out-patients, giving a total of 226 boys to 252 girls. He thinks that rheumatism is naturally more common in females, even when they are not exposed to changes of weather; and that hence chorea is more predominant in females, on account of the greater frequency of rheumatic heart-disease.

Hughlings Jackson ('Med. Times and Gaz.,' 1869, i, 245), in answer to the argument often urged against the embolic theory of chorea, that anæmia from plugging of the vessels can scarcely lead to increased expenditure of force, quotes the experiments of Prévost and Cotard to show that hyperæmia, &c., constantly follows after arterial obliterations.

Steiner ('Der Praktische Arzt,' Nov. 9, 1869, quoted in the 'Practitioner') refers chorea to spinal irritation from excess or defect of blood, effusion of serum, or hæmorrhages, or organic changes. In three autopsies there was found effusion into the central canal, and in one of them (complicated with rheumatism) the effusion was inflammatory. Of the 52 cases on which his conclusions are based, 40 were females, and all were between six and eleven years old. He regards four to nine weeks as the natural duration of the disease, but thinks relapses are common. He treats it with steel, with or without zinc, and, in obstinate cases, with arsenic. He draws attention ('Jahrb. f. Kinderh.,' 1870, 291) to an epidemic of chorea, and gives briefly the history of 19 cases, the youngest five, the oldest thirteen years, 18 of the number being females. He asserts that imitation had no influence in this epidemic, though probably there was a single cause for its existence. Bromide of potassium failed entirely, and the greatest success was obtained from the following mixture: Fowler's solution 8 drops, tinct. opii 6 drops, aq. destill. ʒiv, of which four tablespoonfuls were given in the twenty-four hours.

Carville ('Gaz. des Hôp.,' 1869, 669) notes the presence of general choreiform movements in a dog after opening the spinal canal in the dorso-lumbar region, which persisted in the whole body after section of the cord in the middle dorsal region. Chauveau, from an experiment of the same kind, had concluded "that chorea is only a morbid manifestation of the reflex power of the cord."

Russell ('Med. Times and Gaz.,' 1869, i, 64) says that out of 99 cases of chorea, emotional development or mental disturbance was present in 38, the former much more frequently than the latter; and that in 15 sleep was interfered with independently of the movements. He concludes that there is no necessary relation between the amount of motor and of intellectual or emotional disturbance. In six, however, the mental disorder was of a very serious nature, amounting to urgent delirium or violent mania, in one case terminating rapidly in death; and he thinks that these six cases indicate two distinct methods in which delirium or mania may manifest itself in the course of chorea, either entirely subordinate to or independent of the motor disorder. The fatal case, and three illustrating the latter position, are given.

Perl ('Berl. Klin. Woch.' 1869, 351) gives the following case of chorea magna (Ch. germanorum). A man æt. 33 fell down unconscious, June 28, 1868, after a violent emotion, and was convulsed for ten minutes. From that time he had daily epileptiform attacks of unconsciousness, with irregular tonic and clonic convulsions, which were preceded by an aura from the epigastrium to the head. These attacks numbered twenty-six in all. After them the patient lay quiet, and began to sing aloud for five minutes or so, reflex action being abolished. Gradually his features assumed an expression of madness: he had

evident hallucinations of vision; saw an enemy before him, hit out at him frantically, raised himself in bed, in spite of a paralysis of both legs, and raged till he fell back exhausted, when he again sang till he gradually became quiet and returned to consciousness. Under the daily employment of warm baths (28° R.), supplemented later with cold affusion, and bromide of potassium, the convulsive movements ceased eight weeks after his admission into hospital. During this time he had 252 attacks, the last occurring Nov. 22, 1868. The paraplegia disappeared in December of the same year.

Leube ('Deut. Arch.,' vi, 273) publishes a case of severe chorea of some years' standing in a girl of eighteen, which was followed by hysteria, and spasm of the pterygoid muscles of the right side, which lasted for three days. Under treatment with the induced current and arsenic she recovered completely.

Bristowe ('Practitioner,' 1869, 193) records seven cases of chorea treated by Ol. Terebinth., Zinci Sulph., Ferr. Carb. Sacch., Arsenic, &c. All appeared to get well by the natural progress of the disease.

Murchison ('Brit. Med. Journ.,' 1869, ii, 211) gives the case of a girl, æt. 15, who was affected with chorea, confined at first to the left side, then becoming general and severe. Bromide of Potassium, Belladonna, Cannabis Indica, and Sulphate of Zinc were tried in vain, and great improvement followed the use of Liq. Strychniæ ♏24, increased to ♏60 in the twenty-four hours.

Following out the treatment of Lubeski and Zimberlin, Perroud ('Lyon Méd.,' 1869, ii, 156) cured a case of chorea in a girl æt. 13 (and a case of hysteria with convulsive attacks, in a girl æt. 19) with æther-spray applied down the spine: other cases of the same kind are given by Mazade, of a boy, æt. 18, under Meynet (ib. 327; and cf. discussion on Perroud's paper, ib. 333), and by Rose of a girl æt. 13 ('Lancet,' 1870, ii, 813).

Rodolfi ('Gaz. Med. ital. lomb.,' 1869, 17) cured eight patients suffering from chorea, in from eight to fourteen days, with chloride of lime, given in doses of ·5 to 1 gramme daily. The only relapse was arrested by a single application of leeches to the temples.

Hughlings Jackson, "Chorea immediately following acute Rheumatism," 'Lancet,' 1869, ii, 803; Welch, "Chorea treated with Succus Conii," ib., i, 325; Wadham, "Case of Fatal Chorea," 'Brit. Med. Journ.,' 1870, i, 105; Sutton, "Autopsy of Case," ib., ii, 7; Wilks, "Remarks on Chorea," ib., ii, 115; Laycock, "Epileptic Chorea of Right Arm," ib., ii, 333; Wickham, "Case of Rhythmic Chorea of the Right Arm and Hand, with partial Paralysis of the right side of the Head and the left lower extremity," ib., ii, 458; Cleland, "Case of Chorea with Membranous Inflammation of Intestine," 'Med. Press and Circ.,' 1869, ii, 77; Langdon Down, "Chorea: treatment of seven cases," 'Med. Times and Gaz.,' 1869, i, 272; Köhler, "Chorea minor: Heilung durch Pillen von Kohlensaürem Eisen und Mangan," 'Wien. Med. Zeit., 1869, No. 53; Roger, "Observation de Chorée Rhumato-Cardiaque" (in a boy, æt. 13 years), 'Gaz. des Hôp.,' 1870, 257, 261; "Cas de Chorée traité au moyen de la Fève de Calabar," 'Bull. Gén. de Thérap.,' 1869, April 30; Maigrot, "Chorée Hystérique remarquable par sa Violence, son Ancienneté, sa Résistance à toutes les Médications Employées, guérie rapidement par l'Hydrothérapie," 'L'Union Méd.,' 1869, i, 542; Inman, "Chorea: its Association with Mental Imbecility," &c., 'Liverpool Med. and Surg. Rep.,' 1869.

Epilepsy.

Luys and Voisin ("Contribution à l'anatomie pathologique du cervelet, du bulbe, et des corps striés dans l'épilepsie," 'Arch. Gén. de Méd.,' 1869, ii, 641) contribute a paper, in which they endeavour to show that the lesions met with in epileptics are not exclusively localised in the medulla oblongata, but are spread over an area much larger than is generally supposed; that the brain-substance itself is involved; that the efferent fibres emerging from it (cerebellar peduncles), as well as the different masses of grey substance with which the latter are continuous, are very often the seat of damage; in fine, that convulsive symptoms may be explained physiologically by a lesion of different parts of the base of the brain, but especially by that of the region corresponding to the sphere from which the influence of the cerebellum is disseminated.

The authors briefly recount the anatomy of the three pairs of bilateral prolongations (inferior, middle, and superior cerebellar peduncles)—describing the fibres of the first principally connected with the olivary body of the opposite side, after encircling, as with a collar of grey substance, the anterior regions of the pyramids, this same collar often presenting an abnormal greyish or amber-yellow appearance in epileptics; the fibres of the middle peduncles intruding into the interstices of the ascending spinal fibres, and then becoming successively the grey substance of the pons; the fibres of the superior peduncles gathering into bundles in the very mass of the red centres of Stilling, and indirectly, by means of multiple processes, stretching from them into the grey substance of the corpus striatum, and forming extremely fine networks of yellowish matter. They then proceed to show that these same parts of the nervous centres are, *par excellence*, the regions of convulsion. In support of this view they give nine cases. In six of these they found lesions of the anterior bundles of the anterior pyramids, accompanied by alterations of the rhomboid bodies (corpora dentata of the cerebellum) and the laminæ of the cerebellum; in two the corpora striata were evidently attacked, and the lesion was on the side opposite to the diseased cerebellar lobe. "There was in these few cases a sort of pathological trio, which agreed satisfactorily with the physiological relations which the authors believe to exist between the cerebellum, certain parts of the medulla oblongata, and the corpora striata." *

In the 'Arch. Gén. de Méd.' (1869, i, 243, 490) will be found an abstract of a paper on the artificial production of epilepsy, read before the Academy of Sciences by Brown-Séquard, and of the discussion which followed it. Guinea pigs which had been operated upon were exhibited. After recounting how, twenty years ago, he had shown that after section of one of the lateral columns of the cord, about the tenth dorsal vertebra, epileptic or epileptiform convulsions could be excited in these animals by pinching the skin of the face and neck, and at a later period occurred spontaneously several times a day, the author pro-

* With reference to the anatomical facts brought forward in this paper, cf. Luys, in Journ. de l'Anat. et de Physiol.,' 1864, p. 225.—A. B. S.

ceeded to give the results of further researches. These show that the same effects may be produced by section of the cord at points higher up and nearer the pons; that the greater part of the cord takes an active part in their production; that the cerebrum, cerebellum, and pons, as shown by their removal in animals artificially rendered epileptic, have no share in them, the attacks continuing in spite of their removal. These phenomena were not met with in the case of dogs, cats, or rabbits; one cat only had shown them. In answer to Collin's assertion that the irregular convulsions obtained in these experiments differed from true epilepsy, the author maintained that the attacks produced in the guinea pigs were not only analogous to epileptic attacks in the human subject, but were proved to be truly epileptic by the fact that they might be hereditarily transmitted. Hardy contended that clinical experience was utterly at variance with the facts asserted by Brown-Séquard; the brain rather than the cord was the seat of epilepsy in man, particularly in cases where the brain is pressed upon by a tumour, and more especially still if the latter be situate towards its posterior part or at its base. Brown-Séquard, after analysing numerous cases of cerebral lesion, had come to the conclusion that disease of the cerebral substance does not produce true epileptic symptoms, and that if these do occur, they probably depend on accompanying lesion of the meninges. He does not assert that the spinal marrow is the seat of epilepsy, but that, under the influence of certain lesions, it becomes the seat of a special modification, by virtue of which organic disturbances are produced elsewhere, manifesting themselves in epileptic symptoms. He insists that he has found in his experiments the three principal characteristics of epilepsy in the human subject—loss of consciousness, convulsions, and intellectual torpor. Chauffard looks upon the convulsions as syndromata, Gubler as one of several forms of epilepsy.

Brown-Séquard (ib.) observed two facts in guinea pigs after lesion of the restiform bodies; hæmorrhage, constantly, under the skin of the ear, and dry gangrene of the latter, occurring on both sides, though the lesion was only of one restiform body, but most marked on the injured side. He has also caused epileptiform symptoms by section of the sciatic nerve in these animals.

He ('Lancet,' 1870, i, 2) concludes from further experiments—1. That nerve-fibres employed in making muscles contract, in fits of epilepsy, are quite distinct from voluntary nerve-fibres. 2. That these two sets of motor nerve-fibres do not occupy the same place in the spinal cord, the voluntary motor being more in the anterior (grey and white) parts of that organ, the others being chiefly in the lateral columns. He notes that this agrees with the fact proved by Charcot, that sclerosis of the lateral column is invariably accompanied by strong muscular spasms.

In a clinical lecture on two cases of epileptiform disorder, with peculiar phenomena, Handfield Jones ('Brit. Med. Journ.,' 1870, ii, 111) draws attention to the liability of epilepsy to occur in modes which vary so much from the accepted types, that an experienced observer might very easily mistake such cases for instances of some other disease. Unconsciousness, of longer or shorter duration, is one of the most constant phenomena of epilepsy; but it seems to be quite established that it is

not invariably present. In the first case, the attacks were often much more prolonged than usual; and, indeed, it was not always easy to distinguish between the paroxysmal and inter-paroxysmal disorders; the former resembling at one time a prolonged general tremor, without loss of consciousness, at another time consisting solely of giddiness. In the second case, at some former period under Trousseau and Jaccoud, who had differed as to whether the disease was hysterical or epileptic, there was tonic spasm of the right arm and leg, with epileptic paroxysms, both occurring at the same time, and separated by an interval of seven years.

Soffray ("Epilepsie provoquée par la frayeur;" 'Gaz. des Hôp.,' 1869, 94) narrates that at Mostagenem in Algeria, in 1850, a kitten, frightened at the sight of a caracal in the writer's rooms, was attacked an hour afterwards with very violent epileptiform convulsions, preceded by sharp cries, and frequently repeated till the animal died at the end of from eight to fifteen days.*

Marbaix ('Press Méd. Belge,' 1869, 237) gives a case of epileptiform convulsions more or less resembling hydrophobia in a man who had been bitten four days before by a cat; they were accompanied by delirium and hyperæsthesia of the optic nerve, a stray light thrown across his eyes causing a convulsive attack. The shortness of the incubation, the blueness of the face, without the "vultueuse" expression characteristic of hydrophobia, the delirium, and the melancholy, not exalted, condition, combined with a history of an epileptic attack a year before, prevented the case being looked upon as one of true hydrophobia.

Huard ('Gaz. des Hôp.,' 1869, 534) gives a case of confirmed epilepsy in a boy, æt. 10 years, who had been treated by a homœopath for three years without any relief, but in whose condition extraordinary amelioration was obtained by the employment of six gramme doses of bromide of potassium.

Maréchal (ib., 255) quotes Sée, who treated three epileptics, one in 1857, one in 1859, and another in 1861, with bromide of potassium; since using the drug they had had no further attacks: he quotes also five cases under Bécoulet. He lays great stress upon the mode of using it: with Gubler and Legrand he denounces the pills in which it is combined with iron, the two drugs being antagonistic, and a great number of the pills being necessary before any effect is produced, and strongly recommends the syrup of Henry Mure, each tablespoonful of which contains exactly two grammes of the bromide of potassium, free from the iodide. At page 157 of the same journal he gives an abstract of a discussion in the Medical Society of Bordeaux, at which different physicians bore witness to the good effects of the drug.

Tyrrell ('Brit. Med. Journ.,' 1869, ii, 143) thinks that there is a common form of epilepsy, in which anæmia and defective nervous control are the prominent symptoms, the majority of patients being women, in whom it appears as *petit mal* at or between the periods of menstruation.

* The date seems uncertain; cf. *ante* Broadbent's chorea cases—two from fright—and the common occurrence, both in animals and human subjects, of the two (?) affections from this cause.—A. B. S.

In these, as well as in children in whom the affection passes from the lighter to the severer form, he finds strychnia given in small doses and frequently, of great benefit.

Schmidt ('Berl. Klin. Woch.,' 1869, 417) asserts that iodine is indicated in epileptiform cases accompanied by nervous debility, anæmia, and chlorosis, with increasing general weakness; but not in full-blooded patients with great nerve-action, when it causes headache, giddiness, dizziness of sight, singing in the ears, and trembling of the limbs. He gave tincture of iodine, or iodine in pills, to eight out of twenty-seven patients suffering from epileptiform convulsions, which had not returned up to the date at which he wrote (*i. e.*, for two years): four others were improved by the drug. The eight cases, and two of the latter, are given in full.

Bacon ('Practitioner,' ii, 334) remarks on the frequent dependence of epileptic insanity on sexual excesses, and gives the details of a case of the kind which was remarkably benefited by castration.

Thorne Thorne, "On Masked Epilepsy" (in a man æt. 36), 'St. Barth. Hosp. Rep.,' 1870, vi, 60; Briand, "Epilepsie survenue subitement chez un individu bien portant," 'Gaz. des Hôp.,' 1869, 438; Saint Vel, "Observation de l'Epilepsie; Emploi du Bromure de Potassium," ib., 71; Thurn, "Syncope und Epilepsia acuta," 'Wien. Med. Woch.,' 1869, No. 12; Decaisne, "Resultats obtenus dans le Traitement de l'Epilepsie intermittente par l'eau froide," 'Compt. Rend.,' t. 69, p. 143; Hughlings Jackson, "Digitalis with Bromide of Potassium in Epilepsy," 'Brit. Med. Journ.,' 1870, i, 32; Handfield Jones, "Fatal Epileptic Stupor," 'Lancet,' 1870, i, 586.

Hemiplegia.

In his first lecture "on organic affections and injuries of the spinal cord producing some of the symptoms of hemiplegia" ('Lancet,' 1868, ii, 593), Brown-Séquard had related fourteen cases of spinal hemiplegia: in his second lecture (ib. 1869, i, 1, &c.) he gives facts to prove that a lesion in one of the lateral halves of the spinal cord produces: 1st, paralysis of voluntary movements in the limbs and trunk on the same side; 2ndly, anæsthesia to touch, tickling, and painful impressions, and changes of temperature in the opposite side; 3rdly, a paralysis of the muscular sense in the corresponding, and not in the opposite side; 4thly, paralysis of the blood-vessels in the trunk and limbs on the same side; 5thly, a morbidly increased sensibility (hyperæsthesia) on the same side; 6thly, symptoms in the eye and face of the same side similar to those which follow section of the cervical sympathetic nerve. He then proceeds to apply these symptoms to the diagnosis as to which side of the cord is the seat of lesion, and adds: 1. When a paralysis exists in both sides of the body, in a greater degree, however, in one than in the other, the lesion is in both sides of the spinal cord, but chiefly in the side corresponding to that of the greater degree of paralysis: 2. When a complete or very marked anæsthesia exists in one of the lateral halves of the body, with some diminution of sensibility, instead of hyperæsthesia in the other half, the lesion exists chiefly in the lateral half of the cord corresponding to the side of least anæsthesia; but it extends slightly to the other half of the spinal nervous centre. He draws attention to certain peculiarities, upon which he insists:—

1. That a lesion in the upper part of the cervical region of the spinal cord can produce anæsthesia in the lower or in the upper limbs, according to its location, and that, consequently, the conductors of sensitive impressions for the lower extremities do not pass through the same parts of the spinal nervous centre as those of the upper extremities; 2. That a lesion in the same region can produce paralysis of the voluntary movement in the lower limbs alone, or in the upper limbs alone; and that consequently the conductors serving to that kind of movement for the upper extremities do not pass through the same part of that nervous centre as those going to the lower extremities. He analyses a large number of cases in which there was lesion of the cervical spine, and shows what very different features the affection may present, though certain characteristics are always to be found; and how these differences are explained by the seat and extent of the lesion.

In his third lecture (ib., 1869, ii, 429) he gives the characteristic symptoms of the affection, which he proposes to call Hemiparaplegia, due also to a lesion in one of the lateral halves of the dorsal region of the cord. He gives four cases of it, the first published by Monod ('Bull. de la Société Anatomique,' 1832, p. 79), and by Breschet ('Arch. Gén. de Méd.,' 1831, xxv, p. 101), which was caused by hæmorrhage chiefly into the right lateral half of the cord in the dorsal region; a second by Charcot ('Arch. de Physiol. Norm. et Path.,' March, 1869, p. 291), in which a tumour pressed chiefly on the left side of the cord in the same region; a third by Oré ('Mém. de la Soc. de Biol.,' 1853, v, 303), in which a tumour compressed the right half in the middle dorsal region; and lastly a case which he himself saw in 1866, where there was probably hæmorrhage into the cord. He concludes by stating that when this affection is complete, it is characterised by the following features:—(*a*) *on the side of the lesion in the spinal cord:* 1. Paralysis of voluntary movement. 2. Loss of the muscular sense. 3. Hyperæsthesia to touch, to pain, to tickling, and to heat and cold. 4. Perfect knowledge of the place on which an impression is made. 5. Vasomotor paralysis and elevation of temperature. 6. Existence of anæsthesia in some parts, or in a small zone, between the upper limits of hyperæsthesia, and the healthy parts of the body. (*b*) *On the side opposite to that of the lesion:* 1. Conservation of voluntary movement and muscular sense. 2. Anæsthesia to touch, &c. (cf. *a*, 3.)

Hitzig ('Virch. Archiv,' xlviii, 345), after referring to Charcot's observations on the occurrence of an affection of the joints in severe hemiplegia, in which he gave four cases with their autopsies, three showing softening of the brain as the starting-point of the hemiplegia, the fourth an abscess in one temporal lobe, publishes seven cases observed by himself between February and July, 1869. In all there was an incomplete dislocation of the head of the humerus, with vague pains in the arm increased by movement or pressure. The paralysed arm was generally swollen, warmer and moister than the other. The pains in the joints occurred from six to eight weeks after the hemiplegic attack; and it seemed as if the joint irritation had some connection with the patient's leaving his bed. After referring to the views of

Brown-Séquard and Charcot, Hitzig pronounces against that held by the latter, according to whom the joint affection is a form of neuro-paralysis analogous to the livid swelling and increased temperature of paralysed limbs. For cogent reasons he thinks it probable that the joint affection observed by him does not stand in any direct relation to the central lesion, but occurs rather as a consequence of the paralytic dislocation of the head of the humerus, which rides upon the cartilaginous margin of the glenoid cavity, out of which it has slipped. He has seen this dislocation and inflammation occur as well in peripheral paralysis of the brachial plexus. The paper concludes with an abstract of Charcot's and his own cases.

Tournié ('L'Union Méd.,' 1869, vii, 205) gives a summary of the cases of dorsal tumours of the hands, and of the sheath of the extensor tendons of the fingers recorded by French physicians; four by Gubler (three in lead paralysis, one in hemiplegia); nine by Nicaise in lead paralysis; two, questionable, by de Haen; one by Tanquerel des Planches; one by Bouchard in lead-paralysis, and six by himself. In this paper he gives three more cases occurring in patients unaffected by lead-poisoning, after cerebral hæmorrhage and hemiplegia, and offering well-marked symptoms of an acute inflammation which not only occupied the tendons and their sheaths, but invaded the metacarpo-phalangeal and phalangeal articulations, setting up a true arthritis in the first two cases, and great pain in the third. In the first case these symptoms made their earliest appearance twenty days after the hemiplegic attack, in the other two on or about the eighth day after, and disappeared in the course of two months.

Colrat read a paper before the Société des Sciences Médicales at Lyons ('Lyon Méd.,' 1869, ii, 609), on a case of hemiplegia with symptoms of cerebral embolism in a patient suffering from phthisis. Perroud gave the notes of three other cases of the same kind, and Tripier of another still alive, affected probably in the same way. The autopsies of three are given. Perroud considers that embolism in phthisis originates in one or other of the following: 1. Endocarditis. 2. Cavities from which the broken-down lung tissue has passed into the circulation. 3. A detached clot from the left heart; the great tendency to hyperinosis observed in phthisical patients tending to support the last hypothesis.

Frank-Smith ('Lancet,' 1869, i, 427) publishes seven cases of hephæstic hemiplegia (hammer-palsy), differing from scriveners' palsy by the absence of spasm and extension of the paralysis; occurring with one exception in otherwise healthy patients, young or in the prime of life. The exceptional case had the characteristics of aphasia and agraphia. All recovered under tonic treatment and rest.

Russell, "A Case in which left Hemiplegia was followed by Hemiplegia on the right side before complete recovery," 'Med. Times and Gaz.,' 1869, ii, 350; Russell, "Right Hemiplegia after Labour," &c., 'Brit. Med. Journ.,' 1870, i, 335; Finlayson, "Hemiplegia in Children," ib., 454; Allbutt, "Remarks on Functional Hemiplegia in Child-bearing Women," ib., ii, 351; Hughlings Jackson, "Hemiplegia from Cerebral Hæmorrhage where there is Valvular Disease of the Heart," ib., 459; Sibson, "Hemiplegia following Rheumatic Affection of the Heart," 'Lancet,' 1870, i, 873.

Aphasia.

Bastian ('Med. Chir. Rev.,' xliii, 209) commences his paper with an inquiry as to the relations existing between the several forms of "loss of speech" in cerebral diseases, and attempts to explain the phenomena presented in the various classes by the doctrine of the physiology of spoken thought, according to which words are revived in the cerebral hemispheres as remembered sounds in an unconscious and automatic manner, calling into play, on the exertion of the requisite volition, the various muscles necessary for the articulation of sound. He gives the following table of the relations of the various forms of loss of speech to one another:

- **Loss of Speech.**
  - Ability to articulate unimpaired.
    - 1. Absence of wish to speak, *e. g.* in some cases of insanity, and perhaps of hysterical aphonia.
    - Wish to speak existing.
      - 2. Various forms of paralysis and incoordination of memory. *Amnesic defects.*
      - 3. Memory existing, and words being revived as *remembered sounds*, the mechanism by which these excite the automatic acts of speech is interfered with. *Ataxic defects.*
  - Ability to articulate impaired.
    - 4. Slightly, from paralysis of ninth nerve, &c., in cases of hemiplegia, with or without co-existing "aphasia."
    - Gravely.
      - 5. In some severe cases of hemiplegia, either with or without co-existing "aphasia."
      - 6. Advanced cases of glosso-laryngeal paralysis.

Of the second form, defects of memory, he distinguishes two subdivisions; paralytic defects, shown by (1) momentary forgetfulness and confusion about names and nouns, with power of recovery after a time, or more permanent and habitual forgetfulness, with attempts to remedy this by the employment of a periphrasis: (2), sudden and momentary loss of the "thread of thought:" (3), inability to continue any train of thought at all after the slightest interruption; and incoordinate defects, seen in (1) forgetfulness of the word wanted, most marked with respect to nouns, with a consciousness of mistake when the wrong one is employed: (2), the same forgetfulness without the consciousness of the last: the less associated the word or sound uttered is to the word which should have been employed, the greater probably is the impairment of memory: (3), recollection of the suitable words, which are uttered without any proper order or sequence: (4), ability to use certain verbal forms only, *e.g.*, the infinitive mood only: (5), transposition, more or less regular, of the letters of a word, *e.g.*, *gum* for *mug*: (6) almost invariable substitution of certain letters for others, *e. g.*, *z* for *f*. Instead of the name "amnesic aphasia" proposed by Sanders for these forms, Bastian would use "amnesia verbalis," or "amnesia" simply.

Before commencing an analysis of the cases more especially included under the term aphasia, he draws attention to some of the phenomena involved in thinking and speaking, the consideration of which leads him

to suggest three primary divisions: I. Aphasia, the capability of thinking, but not of writing or speaking. II. Aphemia, the capability of thinking and writing, but not of speaking. III. Agraphia, the capability of thinking and speaking, but not of writing.

Aphasia is far more frequent than either of the other two, and may or may not be accompanied by hemiplegia and dementia. Sometimes the patients cannot utter a sound, or only mutter inarticulately, or constantly repeat some meaningless sound or sounds, or use some single word, or even mere sounds, or employ habitually some short phrase, or three or four meaningless words or expressions in a constant and definite manner. Generally they are unable to repeat the simplest sound, though in some cases they are able to do so, and in others present a remarkable power of mimicry: many are able to utter additional words under the influence of some strong emotion (swearing, &c.); as a rule, they cannot read aloud. As far as the power of expressing themselves in writing is concerned, some make mere meaningless strokes, others can form separate letters, but cannot combine them suitably; others can write their own name, or some other familiar word, without a copy; and others can write the first syllable of a polysyllabic word, or the first word of a sentence, dictated to them, the rest being all confusion; very many can copy words written before them far more easily than they can repeat one uttered in their hearing. Bastian recognises, and illustrates with cases, four groups of aphasia. (1). In the *very severe* cases, the amount of mental impairment is very great, and is generally associated with recent hemiplegia. (2). In the *severe*, there is emotional weakness, with proneness to shed tears, to immoderate laughter, or to sudden transitions from one to the other. (3). The *typical* cases include patients who can think, but cannot speak or write. (4). The *less severe* cases are connected with the last by others of all intermediate degrees of severity. In the slighter the patient can speak more words, imitate and repeat sounds to a certain extent, and express himself to a limited degree in writing.

The examples of aphemia are very rare and very remarkable. Bastian quotes a case from Trousseau, another from Osborn ('Dub. Journ. of Med. and Chem. Sci.,' iv, 157), and a third from Bouillaud. In all there was an absence of hemiplegia, and in the first two the mental faculties appeared to be unimpaired. In the first there was no power of articulating; in the second a choreic and jargon-like speech; and in the third the words were spoken without connection, as in amnesia.

Cases of agraphia are also very rare. Two are quoted from Hughlings Jackson ('Lond. Hosp. Rep.,' i, 432, and 'Brit. Med. Journ.,' 1866), and a third from Ogle ('St. George's Hosp. Rep.,' 1867, p. 103). A fourth is given by the author. The first and third occurred in patients with right hemiplegia; the second in one who had been subject to epileptiform convulsions, affecting the right half of the body; the fourth suffered from dementia and most remarkable agraphic symptoms of an amnesic variety, without paralysis or epileptiform convulsions.

After reviewing the writings of different authors on the subject, he gives his own views as to the physiological meaning of the different phenomena, considering that, in amnesia, there are principally defects of

the cortical grey matter of the hemispheres, while in aphasia there is a lesion of the afferent or efferent fibres, or both, in some part of their course between the cortical grey matter and corpus striatum, or in the latter itself.

In vols. xiv and xv of the 'Journal of Mental Science,' will be found the very long continuation* of Bateman's paper "On Aphasia or Loss of Speech in Cerebral Diseases," in which he discusses the researches and opinions of the principal physiologists in different parts of the world, and gives minute notes of the clinical history, with four autopsies, of cases observed by himself. He declares that, in spite of all that has been written in reference to the localisation of speech, the question must still be considered *sub judice*, and that an impartial sifting of the evidence he has collected leads him to the conclusion that something may be said for each of the popular theories, but none will bear the test of disinterested and impartial scrutiny, and that he considers it by no means proved that there is a cerebral centre for speech at all.

Sander ('Archiv f. Psychiatrie,' ii, 38) publishes fifteen cases of aphasia, with five autopsies, and gives the results of his and Griesinger's observations upon them. There was more or less marked right hemiplegia in all, in several certainly confined to the right facial nerve only. From these autopsies they think they may conclude this much only—that aphasia exists whenever the convolutions of the left island of Reil, lying in the depth of the Sylvian fissure, consequently the gyri radiati, and the part of the central lobe lying nearest them, and especially the outer capsule (capsula externa), and the most peripheral portions of the lenticular nucleus are affected in any way whatever. In the majority of cases the lesion depends upon embolism of the left artery of the Sylvian fissure, and as the anterior branch of this vessel supplies the posterior portion of the third frontal convolution, the latter is generally affected as well. In two, however, of the cases examined the original lesion was found in the left parietal lobe, in some of the bundles of the fibres radiating from the corpus callosum; and in one only had a secondary degeneration (nuclear proliferation) advanced as far as the island. These two patients were certainly weaker in intellect than is generally the case with aphasics, and the aphasia had made its appearance, not at once, but gradually in the course of several weeks. The convolutions of the island belong to the central lobe, in which we look only for motor and sensitive centres, while the fibres radiating from the corpus callosum consist exclusively of cerebral fibres, and probably subserve the higher mental functions.

Allbutt ('Med. Times and Gaz.,' 1869, i, 491) gives three cases in which aphasia was present. One in a man immediately after a fall on his left temple, followed at a later period by epileptiform fits, decided paralysis of the right arm, and some weakness of the right leg; the second in a female, æt. 50, who for two years had suffered from epileptiform convulsions, said to be bilateral; her speech was much affected after the attacks; she tried to speak, and "had a mental vision of the words," but could not speak them; in about two hours after, her speech gradually returned. The third case occurred in a man, æt. 30, subject

* Cf. last Biennial Report.

to attacks of tingling in the right arm and hand, followed by absolute blindness, lasting for twenty minutes or longer. This was succeeded by complete speechlessness for two hours, the patient being "able to summon up words before his mental vision."

Béhier ('Gaz. des Hôp.,' 1869, 124) records the history of a female attacked with aphasia after cerebral hæmorrhage, presenting a somewhat curious circumstance. She had been born in Italy, had lived in Spain, and for some years past in France, and knew the three languages; but after this attack completely forgot those of the first two countries, and spoke only French, and of that repeated only, as an echo, the words she heard spoken, without attaching any sense to them. As for Italian and Spanish words, she not only seemed unable to understand them, but did not even repeat them.

Ferber ('Berl. Klin. Woch.,' 1869, 102) publishes the case of a female, æt. 65, with dilated heart and atheromatous arteries, who after a fit suffered from hemiplegia and aphasia, both conditions gradually almost disappearing; but agraphia, shown in writing "*schreigen*" for "*schreiben*," &c., remaining behind.

Eulenburg (ib. 435) gives the history of a boy, æt. 8, who, during the continuance of scarlatinal dropsy, was attacked with severe unilateral convulsions, followed by coma, and, later, hemiplegia with aphasia, with unimpaired intellect. His capacity of speech consisted only in two monosyllabic words, "ach," as a negative reply to questions asked him, and "ja," not only as an affirmative one, but for the name of anything he wanted.

Kisch (ib. 433) publishes three cases; the third was that of a lady, weighing nearly 19 st., who had drunk largely of the Ferdinand springs at Marienbad, containing a great amount of carbonic acid. She was attacked with congestion (hyperæmia) of the brain, dizziness, falling down, without loss of consciousness, headache and complete aphasia; all the symptoms disappeared at a later period.

Berger ('Wien. Med. Woch.,' 1869, No. 102) saw two cases of very transitory aphasia, occurring in a mother and daughter, from indigestion.

Habershon ('Lancet,' 1870, ii, 402) records a case of aphasia, in a woman, caused by fright.

Judée, "Études Psychologiques. Ce que c'est que l'Aphasie," 'Gaz. des Hôp.,' 1869, 438; Bateman, "On Aphasia" (abstract of paper in 'Journ. of Ment. Sci.'), 'Med. Times and Gaz.,' 1869, i, 486; Marcet, "A case of Aphasia," 'Lancet,' 1869, i, 115; Thacker, "On Aphasia," ib., 1870, ii, 429; Dunn, "On Loss of Speech, or the Power of Utterance, in respect to its cerebral bearings and causes," 'Brit. Med. Journ.,' 1869, i, 99; Lossen, "Ein Fall von Traumatischer Aphasie," 'Berl. Klin. Woch.,' 1870, 297.

Neuralgia.

Anstie ('Lancet,' 1869, i, 41) protests against the bad prognosis laid down by Trousseau in all cases of "epileptiform" neuralgia, and believes that a much better result than he looked for may be obtained by the employment from an early stage of (1) counter-irritation, in the form of a blister applied to the branches of the occipital nerve at the nape of the neck; (2) the assiduous use of cod-liver oil, or of some

fatty substitute for it; (3) subcutaneous injection of morphia (gr. $\frac{1}{6}$ twice daily, increased in rare cases to gr. 1), or when that fails, of atropine (gr. $\frac{1}{60}$); and (4), when possible, the constant current.

Mitchell ('Amer. Journ. of Med. Sci.,' lviii, 16) encountered from time to time certain forms of neuralgia, accompanied by muscular spasms and extravasations of blood in the affected part. He relates three cases, all occurring in females; and explains the circumscribed hæmorrhages by nutritive changes in the walls of the vessels, occasioned by conditions of the nervous system, analogous to atrophic changes in the skin and nails in nervous diseases. He believes that purpura in certain cases may be as justly classed with the neuroses as herpes.

Nothnagel ("Tropische Störungen bei Neuralgieen," 'Arch. f. Psychiatre,' ii, 29) concludes that the view as to the participation of the so-called trophic nerves in neuralgia cannot be held till the existence of these nerves is more surely demonstrated, and while other explanations are at hand, upon which reliance may be placed. In individual cases the long-continued absence of motion may certainly be the cause of the atrophy. In the majority (four out of five) of cases of neuralgic atrophy observed by him, a distinct affection of the vascular nerves, as evidenced by arterial spasm, could be recognised. This was not found in any case of simple sciatica. He concludes that it is probable that the affection of the vascular nerves, with its consequences, is to be looked upon as the cause of the changes in nutrition.

Tripier ("Pathogénie d'une classe peu connue d'affections douloureuses.—Algies centriques et réflexes," 'Arch. Gén. de Méd.,' 1869, ii, 399) sums up his paper as follows:—The nerves of sensation even in the cerebro-spinal system may transmit morbid impressions, independently of their excitation being perceived, and without any consciousness of the process. The nerve-centre consecutively affected may act in its turn on the other nerves of sensation, sometimes paralysing them, generally causing them to be the seat of pain. The localisation of these secondary reflex actions is governed by the special liability of certain nerves and nerve-territories to receive impressions, and by the fact of neighbourhood (a branch of the same pair being generally affected). When a painful phenomenon is met with, the organic cause of which cannot be connected, either by observation or induction, with the seat of pain, it must be sought in the other branches of the same pair, or in some organ known to be in physiological or pathological relation with the affected part, and to this primitive lesion must treatment in the first instance be addressed. He gives six cases in support of his thesis.

Finco, "Neuralgie guarite coll' ustione del piede e dell' orecchio," 'Gaz. Med. Ital. Lomb.,' 1869, 77; Chapman, "Neuralgia: its Pathology and Treatment," 'Med. Times and Gaz.,' 1869, i, 298; Ib., "Two cases of Neuralgia with grave complications treated successfully by means of the Spinal Icebag," ib., ii, 622.

Meningitis, Acute Hydrocephalus, Acute Œdema of the Brain, Congestion, and Hæmorrhage.

In two cases of tubercular meningitis in adults, Gairdner ('Glasg.

Med. Journ.,' 1869, i, 260) found an absence of many of the symptoms which characterise the so-called acute hydrocephalus of children. For instance, there was no vomiting, strabismus, or ptosis; no irregularities in rhythm of pulse and respiration; no epileptiform convulsions; no well-defined paralysis or cutaneous hyperæsthesia; no retraction of abdomen or grinding of the teeth; no nuchal rigidity, so striking a symptom of meningitis in children; no alteration in the pupils.

Colberg ('Deut. Archiv,' v, 560) has left on record a case of acute hydrocephalus of the ventricles, with contraction of the neck, without any affection of the meninges at the base of the brain, in a woman, æt. 27, in whom the microscopic examination showed the adventitia of numerous vessels filled with small cells, and the nuclei of many capillary vessels in a state of proliferation. A second case is given as an illustration of Dietl's paradoxical assertion, that acute œdema of the brain represents a tubercular meningitis arrested in the congestive stage. A phthisical woman, æt. 23, was attacked, six days before her death, with left hemiplegia, the cause of which Colberg considered to be a circumscribed right-sided œdema of the brain. With this was found a development of recent tubercles, and some gelatinous exudation in the pia mater at these places.

Billroth ('Wien. Med. Woch.,' 1869, 1) publishes the history of two boys, of the ages of five and eight years, who had surgical fever after operations (resection of the knee-joint, and extirpation of an enlarged thyroid), and died of coma after convulsions. The autopsy showed acute œdema of the brain, thickening of the diploë, and abnormal ossification of the sutures. He considers that the œdema was due to—(1) the hyperæmia set up by the loss of blood and the large amount of water subsequently drunk; (2) the increase of blood-pressure caused by the pyrexia, by which all the tissues of the body were saturated with excess of fluid; (3) the changes in the skulls of both patients, which may have been the result of a former rachitic process, if it be assumed that the thickening of the diploë and the abnormal ossification of the sutures, by narrowing the fissures of Santorini and the foramina lacera, hinders the exit of venous blood from the cavity of the brain. Besides this, the lymphatic exit of the cerebro-spinal fluid might itself have been narrowed.

Heddæus ('Berl. Klin. Woch.,' 1869, 564) contributes in full the history of a child, æt. 1¾, whose illness commenced under the form of typhoid fever, and who was attacked later by convulsions, lasting for about fourteen days. He attempts to make out that this was one of those very rare cases of recovery from miliary tuberculosis of the lungs and meninges (!).

Bouchut ('Gaz. des Hôp.,' 1869, 202) gives five cases, which prove the existence of a congestive neurosis of the brain simulating meningitis, and dependent on chlorosis, in four girls between the ages of 9 and 14, and in a boy æt. 13. In all there was more or less congestion of the optic disc, with pains in the head, vomiting, and slow pulse. He looks upon it as a vasomotor affection set up by reflex action, from irritation of the uterus, intestines, stomach, or tonsils, and considers that the indications for treatment will be found in those organs.

Andrews ('Amer. Journ. of Insanity,' xxv, 359) gives the following:—A boy, æt. 15, had been perfectly well, up to an attack of typhoid fever in April, 1868. During recovery he did not regain flesh, and began to give evidences of great mental disturbance in a marked change of disposition and conduct. Some time after his admission into an asylum he complained suddenly of headache and pain in the stomach, became convulsed with opisthotonos, more maniacal, and then quieter, and died suddenly without further convulsions. The autopsy showed the subarachnoid cavity filled with a thin layer of blood, and the vessels of the pia mater much congested; the hæmorrhage was most abundant at the base of the brain; the lateral, third, and fourth ventricles were filled with blood-clots and liquor sanguinis. The cerebral substance appeared normal in colour and consistence, but the microscope revealed advanced degeneration of the walls of the blood-vessels.

Johnston, "Case of Hydrocephalus," 'Dubl. Quart. Journ.,' xlvii, 467; Kennedy, "Case of Hydrocephalus advanced to second stage; recovery under the use of an issue," 'Brit. Med. Journ.,' 1869, ii, 557; Curran, "Hydrocephalus Acetus," 'Med. Press and Circ.,' 1869, i, 537; Reiner, "Zur Casuistik der Ausgebreiteten Gehirn-apoplexie bei Kindern" (in a boy and girl, æt. 9), 'Petersb. Med. Zeit.,' xvi, 80; Crisp, "Apoplexy of the Cerebellum in girl æt. 1½ year," 'Path. Soc. Trans.,' xx, 1; Cayley, "Apoplexy in a girl æt. 11 years: nuclear deposits on minute cerebral arteries," ib., 2; Foville, "Apoplexie Capillaire de la Substance Cérébrale, consécutive à l'Oblitération d'une veine Méningienne," 'Gaz. des Hôp.,' 1869, 353; Kelly, "Cerebral Hæmorrhage in a patient 12 years of age: hemiplegia, aphasia, subsequent meningitis," 'Lancet,' 1869, ii, 541; Ib., "Cases of Apoplexy with Atheroma of the smaller Arteries, and uniform Pulmonary Emphysema," ib., 802; Pepper, "Cerebral Hæmorrhage of left Anterior Lobe, left Crus Cerebri and Pons: marked degeneration of arteries, with numerous minute miliary aneurisms, and circumscribed hæmorrhages into the perivascular sheaths," 'Amer. Journ. of Med. Sci.,' lviii, 136.

The Ophthalmoscope in Diseases of the Nervous System.

Bouchut (quoted in the 'Med. Times and Gaz.,' 1869, ii, 14) appears to have come to the following conclusions:—(1) Diseases of the spinal cord, as acute myelitis, spinal sclerosis, locomotor ataxy, &c., frequently induce a congestive lesion of the optic disc, which at a later period becomes atrophic. (2) The lesions of the optic nerve produced by disease of the cord are the result of a reflex ascending congestive action, the great sympathetic nerve acting as the medium between the two. (3) The presence of hyperæmia of the optic nerve, of a reddish suffusion, or of a total or partial atrophy of the disc, coinciding with weakness and numbness of the lower extremities, indicates the existence of an acute or chronic disease of the spinal cord.

Bouchut, "Des Tubercules de la Choroïde et de la Rétine pouvant servir au diagnostic de la tuberculose cérébrale," 'Gaz. des Hôp.,' 1869, 2; Ib., "Cérébroscopie," ib., 113; Ib., "Hémiplégie diphthéritique droite, Cérébroscopie, Atrophie papillaire et embolie dans l'œil gauche, névrite congestive de la papille droite," ib., 401; Ib., "Des embolies du cerveau chez les enfants et de leur diagnostic par la cérébroscopie," ib. ,233. Allbutt, "On the diagnostic value of the ophthalmoscope in tubercular meningitis," 'Lancet,' 1869. i, 596. Berthold, "Ein Fall von Hämorrhagia retinæ als Vorbote einer tödlich verlaufenen Apoplexie," 'Berl. Klin. Woch,' 1869, 415. Fränkel, "Weitere Beobachtungen von Aderhauttuberkeln," ib., 37. Robertson, "Four cases of spinal myosis, with remarks on the action of light on the pupil," 'Edinb. Med. Journ.,' xv. 487.

Abscess of the Brain, Softening, Embolism, &c.

Thorp ('Brit. Med. Journ.,' 1869, i, 122) publishes the case of a man, æt. 29, who had suffered from ophthalmia and "liver derangement" in Egypt, four years before death. There was no history of injury to the head. The chief symptoms were slight muscular paralysis, numbness of left side, pain in eyes, pupils normal or only slightly contracted. At the autopsy an abscess was found occupying the whole of the right thalamus, with a sac about a quarter of an inch in thickness. The brain and calvarium were otherwise healthy.

Després ('Gaz. des Hôp.,' 1870, 225) records the case of a girl, æt. 18, who had been under treatment eight months before for well-marked "secondary" syphilis. On March 25th she was seized with intense pain in the head and repeated vomiting, with general, though slight, delirium. No other cerebral symptoms presented themselves, and she died suddenly, sixteen days later, comatose. The autopsy showed an abscess situated at the external lateral portion of the occipital lobe of the right hemisphere, containing pus and a little cerebral detritus; its walls were irregular and jagged, and the brain-substance in its neighbourhood softened; immediately above it, and separated from it, was another abscess of older date, its walls made up of the conjoined pia mater and visceral layer of arachnoid and by a thickened uniting membrane; it also contained pus of a gangrenous colour and smell.

Lochner, in 'Schmidt's Jahrbücher' (1870), quotes a case reported by Burnet ('Philadelphia Med. and Surg. Rep.,' xxi, 251). A female, æt. 18, was admitted into the Bellevue Hospital, July 26, suffering from general prostration, impaired intellect, and slight delirium, and with a strong and regular pulse. Since the 23rd she had had pain in the left ear, followed by purulent discharge. Next day convulsions and opisthotonos occurred, and death followed on the 31st. The autopsy showed a small collection of pus outside the dura mater, near the tip of the petrous portion of the left temporal bone; a large abscess in the middle and posterior lobes of the left cerebral hemisphere; the under surface of the brain of a faintly greenish colour; the brain-substance in the neighbourhood of the abscess softened and discoloured. In the cerebellum there was a deposit of pus under the arachnoid; the pia mater was strongly injected. There was some extravasated blood outside the dura mater of the cord, but otherwise no inflammation of the membranes.

Lyons ('Dub. Quart. Journ.,' xlviii, 216) found softening of the left lobe of the cerebellum in a man, æt. 60, which he considers due to a condition of temporary or transient embolism of the vessels supplying this part. During life the symptoms had been ataxy of the lower extremities, paralysis of the right side of the face, delirium, and confusion of speech.

Feinberg ('Berl. Klin. Woch.,' 1869, 221) found an abscess in the cerebellum in a man who had suffered from chronic internal otitis, with caries of the petrous bone. There was ataxy of the lower extremities; the intellect was free; there were no convulsions, anæsthesia, or troubles of sight.

Böttcher ('St. Petersb. Med. Zeit.,' xv, 313) considers that numerous metastatic abscesses, found in the brain of a soldier, æt. 26, were due to emboli, which had reached it from an abscess in the lungs; lung-pigment was present inside the cerebral abscess.

Cholmeley, "Circumscribed abscess in the left cerebral hemisphere," 'Path. Soc. Trans.,' xix, 22. Murchison, "Embolism of left middle cerebral artery, and disease of the brain, &c.," ib., 1; and see Ogle, ib., 27; Moxon, ib., 29; and Bastian, ib., xx, 106.

Tumours.

Chappel ('Lyon Méd.,' 1869, i, 541) gives a case, with autopsy, of a man, æt. 60, in whom was found a sarcoma at the base of the brain, compressing several nerve-roots, and causing the symptoms observed during life.

Perroud (ib., ii, 81) also gives the case and autopsy of a female, æt. 43. There were found four gummatous tumours in different parts of the brain, and one in the left amygdala of the cerebellum, which compressed the upper part of the floor of the fourth ventricle, and had produced the polyuria from which the patient had suffered during life (Cf. Dömpeling's case, p. 94 of this Report). Besides these there was well-marked syphilitic affection of the liver.

Chapman ('Glasg. Med. Journ.,' 1869, 164) publishes the history and autopsies of three men, between the ages of 25 and 32, in each of which were found several tumours, composed, according to him, of primary cancer, occupying the grey matter of the convolutions, varying in size from a pea to a walnut, of firm cartilaginous consistence, the larger ones undergoing fatty degeneration at their centres. The immediate cause of death in all the cases appeared to be softening of the cerebral substance from the pressure of the tumours. In one case secondary tumours were found in one lung. One case was supposed during life to be one of general paralysis of the insane; the other two were marked by the occurrence of epileptic fits.

Ebstein ('Virch. Archiv,' xlix, 145) describes at length a remarkable case of an osseous tumour occupying a great part of the left hemisphere of the cerebellum, without any symptoms during life. The patient, a woman, æt. 44, died of dropsy from emphysema and dilated heart, but except an apoplectic attack, due to cerebral hæmorrhage, a few days before her death, there were no symptoms of the nervous system being affected in any way. The tumour consisted of true bone, with complete Haversian systems in many parts. On analysis, it was found to contain gelatin, and phosphates and carbonates of magnesia and lime. It had apparently exerted no pressure on the surrounding parts, the nervous substance wasting as it grew. The pons and crura cerebelli, the membranes, &c., were quite unaffected. It appeared to have commenced in the centre of the hemisphere, probably from the interstitial neuroglia. The author remarks on the negative results of most pathological processes in the cerebellum, as bearing on the question of its function, and collects eight well-established cases of destruction of more or less of this part of the brain, in proof of the inconstancy of the symp-

toms. Besides its clinical value, the case has pathological interest from the rarity of true osteoma in the brain. He can only cite three cases collected by Virchow ('Krankh. Geschw.,' ii, 96); one recorded by Lentin (Blumenbach's 'Medic. Biblioth.,' ii, 75); another by Meschede (a very large tumour in an epileptic, 'Virch. Arch.,' xxxv, 472); and a sixth by Ranvier ('Bull. de la Soc. Anat.,' 1862).

Steudenar publishes (ib., l, 222) three cases of psammoma of the dura mater of the brain and spinal cord, and of the choroid plexus, with figures of the microscopical appearances.

Loretz (ib., xlix, 435) gives a case of neuroma with ganglion-cells, connected with the upper intercostal nerves and (?) inferior cervical ganglion of sympathetic.

Latham, "Primary cancer of the brain," 'Brit. Med. Journ.,' 1869, i, 285. Hughlings Jackson, "Death by hæmorrhage from cerebral tumour," 'Lancet,' 1869, ii, 571. Richet, "Tumeurs du cervelet," 'Gaz. des Hôp.,' 1869, 308. Prunac, "Tubercules du cervelet et du bulbe, tuberculose viscérale, meningitis aigue simple intercurrente," 'Lyon Méd.' 1869, iii, 310.

Sclerosis.

Schüle ("Beitrag zur multiplen Sclerose des Gehirns und Rückenmarks," 'Deut. Arch.,' vii, 259) gives a case of multiple sclerosis of the brain and medulla. The affection commenced, after prodromal symptoms, such as frequent nausea, gastralgia, giddiness, &c., with those of ataxy (incoordination of movement), and later with those of paralysis agitans (violent trembling and tossing during voluntary movements, and sudden cessation of the latter on supporting the affected limb); these were followed by impairment of speech, deglutition, and mastication; paralysis of the lower and right upper extremities, with entire preservation of sensation to the last. At first there was psychical exaltation, then depression, and finally complete stupor. There were no changes of nutrition, and the electro-muscular excitability was preserved up to a short time before death, which occurred during an attack of pneumonia, two and a half years after the first commencement of the affection. The autopsy showed sclerosed portions in different parts of the brain, alternating with others which bore signs of grey degeneration; grey points of softening were present in the cord, the process diminishing in intensity downwards, and affecting very slightly the posterior columns. Under the microscope, the anatomical lesion, as in former cases, was found to be a proliferation of the neuroglia, with secondary destruction of the nerve-fibres and ganglionic corpuscles. According to the author, the places affected with grey degeneration and those with sclerosis are different stages of the same process, the former dating from a recent, the latter from an earlier period of the affection.

Bärwinkel ("Zur Lehre von der herdweisen Sclerose der Nervencentren," 'Arch. d. Heilk.,' x, 590) publishes a very interesting case of the same kind in a man, æt. 28, in which the diagnosis was made with some probability during life. He thinks the following are the chief diagnostic marks of this affection, especially when occurring in the

cord:—(1) A paralysis of varying intensity, commencing insidiously in the lower extremities, and gradually attacking the upper. (2) At the very beginning increased reflex irritability, which manifests itself either in an apparently spontaneous manner as muscular tension, continued or temporary rigidity and spasm, or, more particularly, as excessive contraction on irritating the skin, especially by the electric current, which lasts some time after the irritating cause has ceased. (3) Persistent, or only very slightly destroyed, or even increased, skin-sensibility in the paralysed parts, and normal function of the urinary and sexual organs. (4) In more advanced stages, irritation of the centres of speech and eye-movement, shown in stammering and nystagmus. (5) Persistent excitability, on faradization of the paralysed muscles, and incapacity to control the disordered gait by the eye.

Leube, "Ueber multiple inselförmige Sklerose des Gehirns und Rückenmarks," 'Deut. Archiv,' viii, 1. Zenker, "Zur Lehre von der inselförmigen Hirnsklerose," ib., 126; Magnan, "Note sur un cas de paralysie générale avec pachyméningite cérébro-spinale, sclérose interstitielle diffuse de la moelle et localisations partielles sous forme d'îlots, de Sclérose ou de plaques irrégulières," 'Gaz. Méd. de Paris,' 1869, 611.

Locomotor Ataxy.

Lockhart Clarke ('Brit. Med. Journ.,' 1869, ii, 4, &c.), after recounting the symptoms and morbid anatomy of the disease, as already known, gives two cases occurring in his own practice; one of which, not dead at the time, presented all the characteristic symptoms; the other, which terminated fatally, wanted some of them, though the autopsy showed the usual and expected appearances, consisting in grey degeneration and disintegration of the posterior columns throughout the whole length of the cord, with, in addition, a softening and disintegration of the grey substance in every part, but more especially in the lower dorsal and lumbar regions, about the centre of each lateral half and around the canal. He lays weight upon his own researches into the anatomy of the spinal cord, and their connection with the pathology of the disease in question; and after describing the three modes in which the roots of the posterior nerves traverse the column, insists upon the fact that the want of co-ordination is due to a partial destruction of posterior nerve-roots, consequently a partial loss of tension by muscles supplied by those roots—a partial loss of muscular tone. In the same way he explains the numbness and loss of sensibility experienced in different parts of the body, which, at the same time, are the seats of the most excruciating pains. It is evident that when the nerve-roots are severed by disintegration in the posterior columns, their peripheral ends can no longer transmit impressions to the cord; but their central ends may still be connected with the grey substance of the cord, and may, therefore, convey to it those irritating impressions that are caused by the process of their disintegration. In conclusion, he refers to the experiments of Cl. Bernard, Brown-Séquard, and others, on section of the posterior columns, in connection with the light they throw upon the

voluntary control of muscular movements, both in the animals experimented upon and in locomotor ataxy.

Allbutt (ib., i, 157) holds that in locomotor ataxy we have two things to deal with—loss of power, probably due to the degeneration of the posterior columns, and a disorder of movement, due to atrophy of the roots of the sensory nerves, with consequent inability to take the bearings of external surfaces. Against Lockhart Clarke's view, he urges that the more the nerve-roots become structureless, the greater is the "wildness" of the muscles supplied by them; and asserts, with Trousseau, that the loss of tactile sensibility is sufficient to cause loss of co-ordination.

Rosenthal ('Wien. Med. Woch.,' 1869, No. 25, &c.), in a paper since published in his 'Handbuch der Diagnostik und Therapie der Nervenkrankheiten,' gives an abstract of 65 cases seen by himself, 46 occurring in males, and 19 in females. Of these, 27 seem to have been due to cold, 31 to libidinous excesses of various kinds, and 7 to exhaustion and severe diseases. The youngest patient was nineteen years old, the oldest sixty-eight; the majority were between thirty and fifty.

Laycock, "An Inquiry into the Influence of Libidinous Excess on the Causation of Locomotor Ataxy," 'Dub. Quart. Journ.,' xlvii, 257; Féréol, "De quelques Symptomes Viscéraux et en Particulier des Symptomes Laryngo-bronchiques de l'Ataxie Locomotrice Progressive," 'L'Union Méd.,' 1869, vii, 39; Ball, "Des Arthropathies Consécutives à l'Ataxie Locomotrice Progressive," 'Gaz. des Hôp.,' 1869, 226, &c. (continued from the volume of 1868, and concluded); Hudson, "Ataxie Locomotrice progressive, Impairment of the Senses of Sight, Smell and Hearing," 'Brit. Med. Journ.,' 1870, i, 436; Fletcher, "Case of Locomotor Ataxy in a Man, æt. 24," ib., 577; Moxon, "Notes on Locomotor Ataxy, or Tabes Dorsalis," 'Lancet,' 1870, i, 543.

Delirium.

Repeating Cohnheim's experiments, Bastian ('Brit. Med. Journ.,' 1869, i, 66) was impressed by observing, in the mesentery of the frog, the amazing activity of the white blood-cells which had come into contact after passing out of the vessels, their coherence, and, finally, their fusion "into a single protoplasmic mass." The same appearance had struck him in the blood removed from the tip of the finger in cases of rheumatic and typhoid fever, pneumonia, &c. In a patient who died of erysipelas, in a state of low delirium, ten days after a cut on the head, and two days after his admission into hospital, Bastian found, on microscopical examination of the smaller vessels and capillaries from the grey matter, minute embolia of apparently recent origin, distinct masses, of irregular shape and size, made up of an agglomeration of white blood-corpuscles, formed in some cases by the union of three or four white corpuscles only, in others of two to three hundred. In other parts large rounded bodies were seen, formed by the complete fusion of corpuscles into a single mass, which had undergone afterwards more or less granular degeneration, with all intermediate grades. With these appearances there were no signs of inflammation of the part itself, such as a lining of corpuscles next the walls of the vessel. Similar conditions were found in the liver and kidneys. Bastian suggests that the so called

"typhoid state" may be due to diffuse minute embolisms of this kind, not only in the vessels of the brain, but in those of other organs also.

Virchow ('Verkalkung abgestorbener Gehirnzellen,' Archiv, l, 304) refers to the fact that when he first (ib., ix, 620) noticed the occurrence of calcified ganglion-cells in the brain, he was inclined to place them in the category of "lime metastases" (Kalkmetastasen), described by himself. Since then, however, he has examined a large number of cases, and thinks that the process belongs to that group of phenomena which he has shown ('Verhandl. der Berlin. Med. Gesellsch.,' 1867, s. 253) to be one of the peculiarities of dead parts inside the human body. He finds, for instance, places, especially in the cortical substance, in which the cells with these processes, and sometimes fine nerve-fibres as well, are calcified. This is especially to be met with after traumatic injuries to the bones of the skull. Sometimes these places present atrophic depressions, so-called "yellow plates," as described by him in the observations referred to; at another time nothing is visible to the naked eye. In the first case, after a peculiar degeneration of the brain in the form of red softening, the calcified elements are found within the softened part, more, however, towards the periphery; in thicker brown cicatrices they lie outside the cicatricial substance in the surrounding brain-matter, the cicatrix itself containing only dead cells. The second case, in which nothing is visible to the naked eye, is most interesting. Several times when traces of impressions or fissures were present on the outside of the skull, he examined the apparently uninjured portions of the convolutions lying beneath, and found the ganglion-cells of the grey substance calcified; this, consequently, was a true necrosis from concussion. Förster, who first described them, saw them on the spinal cord; Virchow's observations refer entirely to the brain.

Meschede ('Virch. Archiv,' l, 305) records the post-mortem appearances in a case of paralysis agitans.

Davidson ('Liverpool Med. and Sur. Rep.,' 1869) publishes a case of nodding convulsions (salaam palsy) in a child nine months old, in which the whole trunk was jerked forward (emprosthotonos). After trying bromide of potassium, it was benefited by the saccharine carbonate of iron, but ended in epilepsy.

Senator ('Virch. Archiv,' xlviii, 295) gives a case of fatal traumatic tetanus, with tables of the temperature and pulse, and an analysis of the urine during the twelve days.

Wydler (ib., xlvii, 155) contributes a case of fatal hydrophobia in a healthy lad of seventeen, in whom the symptoms appeared five weeks after the bite; the wound having healed quickly and soundly, but becoming swollen and painful, with enlargement of the axillary glands. After death were found simply signs of strangulation.

Other papers are—

Robertson, "On Unilateral Convulsions," &c. 'Edin. Med. Journ.,' xv, 513. Haynes, "Case of Unilateral Paralysis Agitans," ib., 339. Jamieson, "Spasm of the Group of Muscles supplied by the Musculo-spiral Nerve" (causing a peculiar spasmodic action of the muscles of the left arm in a blacksmith, æt. 40), ib., xiv, 623. Dalton, "Two fatal

Cases of Convulsions of a Peculiar Character," 'Brit. Med. Journ.,' 1869, ii, 85. Desprez, "Contraction Permanente du Membre Supérieur droit, datant de quatre ans, guérie pas des injections sous-cutanées d'atropine," quoted in 'Bull. Gén. de Thérap.," t. 76, p. 424. Bondet, "De la Contracture dans l'Atrophie Musculaire Progressive; études sur certaines Contractures dites Essentielles, leur traitement par le bromure de potassium," 'Lyon Méd.,' 1869, i, 222. Berthelot, "Contracture Essentielle des Extrémités," 'Gaz. des Hôp.,' 1869, 270. Hérard, "Maladie Nerveuse Extraordinaire," ib., 393. Joffroy, "Kystes symétriques dévellopées dans les Hemisphéres Cérébraux," 'Gaz. Méd. de Paris,' 1869, 570. Wicke, "Tod durch Carbolsäure; Atrophie der rechten Grosshirn und der linken Kleinhirnhemisphäre; Scoliose des Schädels; Heteropie grauer Substanz," 'Deut. Klin.,' 1869, 175. Desnos, "Sur un cas d'Hémorrhagie de la protubérance annulaire, avec albuminurie, &c.," 'L'Union Méd.,' 1869, vii, 241. Sanné, "Hémiplégie alterne double, &c.," 'Gaz. des Hôp.,' 1869, 577. Beveridge, "On a case of disease of the Pons Varolii," 'Med. Times and Gaz.,' 1869, i, 518. Hughlings Jackson, "Hemiplegia from disease of the Pons Varolii," 'Lancet,' 1869, ii, 406. Allbutt, "Two cases of Tumours of the Pons Varolii," 'Trans. Path. Soc.,' xix, 20. Ogle, "Case of Paraplegia produced by pressure upon the Spinal Cord," &c., ib., 16. Jackson, "Case of Spinal Apoplexy," 'Lancet,' 1869, ii, 5. Duckworth, "A case of acute softening of the Spinal Cord," ib., 638. Keen, "Softening of the Spinal Cord," &c., 'Amer. Journ. of Med. Sci.,' lviii, 128. (Review) "Des Dégénérations secondaires de la Moelle épiniére," 'Gaz. des Hôp.,' 1869, 144. Voisin, "Meningomyélite subaigue, &c.," 'Gaz. Méd. de Paris,' 1869, 533. Chevalet, "Paralysie ascendante aigue, d'origine syphilitique," 'Bull. Gén. de Thérap.,' t. 77, p. 328. Labadie-Lagrave, "Observation de Paralysie ascendante aigue," 'Gaz. des Hôp.," 1869, 585. Bayer, "Heilung einer acut ascendirenden Spinal Paralyse unter anti-syphilitischer Behandlung," 'Arch. d'Heilk.,' x, 105. Hitzig, "Beiträge zur Kenntniss des peripheren Lähmung des Facialis," 'Berl. Klin. Woch.," 1869, 18. Wright, "Notes on a case of double Facial Palsy," 'Brit. Med. Journ.," 1869, i, 184. Ballard, "Case of Paralysis of the Hypoglossal Nerve, followed by Sloughing of the Tongue," 'Med. Times and Gaz.,' 1869, i, 297. Riegel, "Ueber Recurrenslähmungen," 'Deut. Arch.,' vi. 37. Howden, "On Granular Degeneration of the Nerve-Cells in Insanity," 'Lancet,' 1869, ii, 157. Eulenburg, "Fall von Paralyse des M. Serratus Antic. Major.," 'Berl. Klin. Woch.,' 1869, 446. Eulenburg and Guttmann, "Die Pathologie des Sympathicus, &c.," 'Arch. f. Psychiatr.,' ii, 153. Ogle, "A Case illustrating the Physiology and Pathology of the Cervical portion of the Sympathetic Nerve," 'Med. Chir. Trans.,' lii, 151. Rendu, "Des Troubles Fonctionnels du Grand Sympathique, &c.," 'Arch. Gén. de Méd.,' 1869, ii, 286. Mollière, "Quelques faits pour servir à l'Histoire de la Physiologie et de la Pathologie du Sympathique Cervical," 'Lyon Méd.,' 1869, ii, 581. Althaus, "On Certain Points in the Physiology and Pathology of the Fifth Pair of Cerebral Nerves," 'Med. Chir. Trans.,' lii, 27. Morgan, "Hydatid Cyst of Brain," 'Brit. Med. Journ.,' 1870, i, 627; Church, "Contributions to Cerebral Pathology," 'St. Barth. Hosp. Rep.,' v, 165. The following are papers on Tetanus: Runge, 'Berl. Klin. Woch.,' 1870, 469. Wunderlich, 'Arch. de Heilk.,' x, 9. Brachet, 'Gaz. des Hôp.,' 1869, 523. Briolle de Roquemaure, ib, 386. Bruchon, ib., 239. Ogle, 'Med. Chir. Rev.,' 1869, 494. Friedler, 'Wien. Med. Woch.,' 1869, No. 15. More, 'Lancet,' 1869, i, 255. Bakewell, ib., ii, 292. Duffy, ib., 7. Brown, 'Edin. Med. Journ.,' xiv, 993. Macarthur, ib., 989. Fenwick, 'Glasg. Med. Journ.,' 1869, i, 300. King, 'Brit. Med. Journ.,' 1869, ii, 347. Corner, ib., 377.

c. *Diseases of Respiratory System.*

Œdema Glottidis.

Martin ('Gaz. des Hôp.,' 1869, 70) records a case of œdema of the glottis occurring after a cold, in a female æt. 51; leeches and general treatment being of no avail, and the suffocative attacks causing at last collapse and imminent death, tracheotomy was performed on the ninth

day of the affection with perfect success; on the fourteenth day, six days after the operation, the canula was removed, and twenty days later the fistulous opening was completely closed.

Grazais (ib., 70) contributes a case of œdema of the larynx in a farm labourer, æt. 56, who, after an attack of intermittent fever, had suffered from œdema of the neck, left arm, and hand. There was no albuminuria, no abnormal symptom of any organ. Incision was made with a bistoury into the swollen parts (the velum palati and its pillars). Suffocative attacks followed at short intervals, and disappeared immediately after the performance of tracheotomy. The canula was withdrawn two days afterwards, and the edges of the wound brought together. Five days later the œdema of the upper extremity had disappeared and was present in the lower. The general health was better.

Barthez (ib., 122) gives a case of œdema of the glottis occurring in a child, æt. 4½ years, who had had hooping-cough for about three months, and was subject to angina and occasional nocturnal fits of suffocation, with whistling respiration and croupy cough. During its stay in hospital no diphtheritic membrane was observed; the attacks of cough and dyspnœa became more violent, and tracheotomy, resorted to on the eighth day after admission, unfortunately, from the size of the canula, only hastened death. The autopsy showed nothing very marked beyond a vascular injection of the mucous membrane of the respiratory tract, moderate in the bronchi, vivid and uniform in the trachea. Barthez observes that œdema of the glottis, as Sestier has pointed out, may leave no trace after death; "a sort of transudation or evaporation taking place" between death and the autopsy. As to the diagnosis of the case, which presented insurmountable difficulties, he remarks the absence of a sign, very frequent, and almost pathognomonic of œdema glottidis, the "special dyspnœa of Bayle," occurring only with inspiration and leaving the expiration free. In children, as in adults, œdema glottidis is almost always a secondary affection, especially at the end of typhoid, or following the acute exanthemata and albuminous anasarca. He knows only one other published case of its occurrence at the commencement of hooping-cough, and following angina, in a girl, æt. six years.—(Benôit, 'Arch. de la Soc. de Méd. Pratique de Montpellier.')

Gibb and Holthouse ('Lancet,' 1869, ii, 338) give a case, occurring in a sailor, æt. 30, of acute œdema of the left subglottic space within the ring of the cricoid cartilage, revealed by the laryngoscope, and relieved by tracheotomy; five months afterwards he was still wearing the tube.

Powell ('Med. Times and Gaz.,' 1870, i, 231) publishes a fatal case of œdema of the aryteno-epiglottidean folds in a boy, æt. 6 months, on whom tracheotomy was not practised; and Fagge (ib.) gives a successful case of tracheotomy in a girl of 7½ years, for simple laryngitis.

Paralysis of the Vocal Cords.

Mackenzie and Evans ('Med. Times and Gaz.,' 1869, i, 356) give four cases of laryngeal paralysis, two of inspiratory, one of phonic, and one in which the two forms occurred together; in one of the first set of cases there was carcinoma of the œsophagus pressing on the recurrent nerves. In the complicated case, and in one of the first, laryngotomy was performed successfully. In his remarks on the cases, Mackenzie holds the exact opposite of Ziemssen's view ('Deut. Arch.,' iv, 386), that bilateral pressure on the recurrents causes absolute loss of voice and no dyspnœa, and asserts that in investigating the ætiology of laryngeal paralysis there is a tendency to overlook the possibility of idiopathic disease in the muscles themselves.

Heller ('Deut. Archiv,' vi, 277) publishes the history and autopsy of a case of right-sided vocal paralysis in a woman, æt. 50, from carcinomatous degeneration of the right vagus and recurrens, extending probably from the bronchial glands, from which the new growth had spread to the pleura, pericardium, and bronchi. The first symptoms during life were periodical pains between the shoulder-blades and slight hoarseness in speaking, which became worse after some weeks, with the addition of dry cough and some distress on bodily exertion. On examination there was dull percussion with deficient respiratory murmur and pectoral fremitus over the lower lobes of the right lung in front and behind, and coarse vesicular breathing, with a few moist râles over the upper lobe. The laryngoscope showed slight swelling and redness of the mucous membrane of the epiglottis, the arytenoid cartilages, and false vocal cords; the left arytenoid cartilage and the corresponding true cord were completely immovable, the former crossed over to the right of the middle line in the attempt to speak; the right arytenoid cartilage remained erect in the position in which it is found after death, and the corresponding true vocal cord was bellied outwards and immovable. After several days there was great increase in the dyspnœa, and in an attack of this kind the patient raised herself hurriedly in bed, struggled for air, and fell back dead. The autopsy showed general carcinoma, in addition to that of the right vagus and recurrent nerves, and atrophy of the latter.

Navratil ('Berl. Klin. Woch.,' 1869, 382) calls attention to the fact that vocal paralysis by itself seldom causes hoarseness. The change of voice is generally only a symptom of the accompanying catarrh, and disappears with the cessation of the latter. The form of the paralysis may be either incomplete (paresis) or complete (paralysis); either central, originating in the fossa rhomboidea of the medulla oblongata, or peripheral, in which case either the vagus in some part of its course, or its termination in the larynx, or the laryngeal muscles themselves, are affected (cf. the experiments of Cl. Bernard, Kölliker, and Czermak); lastly, it may be unilateral or bilateral. After reviewing the laryngoscopic changes found, the muscles concerned, the relations of tone, and the origin of alterations of voice, he declares that the question whether the paralysis be central or peripheral may be generally decided with

ease; the improbability of any morbid origin existing in the nerve-centres, which can narrow the glottis, without also dilating it, excludes with certainty any central lesion. The same argument holds good for the vagus and recurrens, and the author opposes Gerhardt's view, that there must be some one pathological element alone to affect exactly that point of the recurrent nerve (the whole diameter of which is very small) by which the shutting and opening is governed. Quite as unsupported by proof is the view that one of the two branches of the recurrent, the superior or inferior, is affected. The affection itself is in most cases of a rheumatic nature: the paralysis occurs at one time like facial paralysis independently, or in connection with rheumatic inflammation of the joints; in other cases it succeeds severe catarrh of the larynx, or removal of polypi, or strong cauterisation, and then ceases of itself after a short time. One of the causes of this affection is the great exertion required for closing the vocal cords in singing, shouting, or using words of command. Of nineteen patients of this kind whom he had an opportunity of observing, six were singers, four actors, and two teachers. The paper concludes with seven cases of vocal paralysis in illustration of the preceding remarks, with woodcuts representing the laryngoscopic appearances of the paralysed parts during inspiration and phonation.

Riegel, "Ueber Recurrens-lähmungen," 'Deut. Arch.,' vi, 37; id., "Ueber Lähmung einzelner Kehlkopfmuskeln," ib., vii, 204.

*Croup and Diphtheria.**

Johnson ("The Morbid Anatomy of Croup," 'Brit. Med. Journ.,' 1870, i, 4), insists that under the name of croup, English writers confound two distinct diseases: 1. Acute catarrhal laryngitis, inflammatory croup of children; in which, whether in them or in adults, the only structural change after death is congestion and swelling, with, sometimes, superficial abrasion of the mucous membrane, and mucous or puriform exudation on the surface, but no tenacious false membrane. 2. Diphtheritic croup, attended both in children and in adults with the formation of a more or less abundant and tenacious false membrane in the air-passages, dependent not on the age of the patient, but on the specific character of the disease. In the latter affection he considers that local remedies are especially valuable.

Barthez ('Gaz. des Hôp.,' 1869, 37), gives a case of croup in a girl æt. five years, on whom tracheotomy was performed, the wound taking on a diphtheritic appearance later, and the canula being kept in till the 126th day.

In the epidemic observed by König ('Berl. Klin. Woch.,' 1869, 198), the diphtheria spread almost always by contagion, once from direct poisoning by means of an instrument, which having been employed upon a diphtheritic child was afterwards used for a complicated harelip operation on a baby, the latter becoming affected the third day, and dying; beside this, a child operated upon for empyema died from extension of

* These affections have, for the sake of convenience, been placed here, instead of among general diseases, with which, in all probability, they should be classed.—A. B. S.

diphtheria from the wound. Complete seclusion was almost always accompanied by success. After describing the epidemic, in which the most various forms might have been seen occurring at the same time in large families, and declaring that no means used can command any special success, he concludes that there are two therapeutical indications: 1. A prophylaxis, strictly carried out, at the outbreak and during the course of the epidemic: 2. The majority of cases recover by judicious management without specific treatment; in severe cases, so far as present knowledge goes, the indications for treatment are, (*a*) to oppose the symptoms of anæmia and marasmus, set up by the cachexia, by good food, wine, quinine, and in the worst cases by artificial nourishment through the œsophageal tube, and perhaps by transfusion; (*b*) to oppose the symptoms caused by the extension of the affection to the trachea; by tracheotomy, and by cleansing of the trachea with a soft catheter.

Bahrdt ('Jahrb. f. Kinderheilk.,' liii, 96) gives the case of a child æt. 2¾ in which he considers a diphtheritis of the fauces and laryngeal croup followed diphtheritis of a wound of the right hand, the membrane making its appearance on the wound on the fourth day, and the laryngeal mischief on the sixth; tracheotomy was performed on the eighth day, but the child died. The autopsy showed false membrane extending from the tonsils to the bifurcation of the bronchi, with miliary tubercles in the lungs and nowhere else.

Billroth ('Wien. Med. Woch.,' 1870, No. 8) records two fatal cases in which undoubted diphtheritis of the fauces appeared in consequence of septicæmia and pyæmia; in the first case after removal of a tumour in the lower jaw; in the second, after a cellular inflammation set up by a bite, which led to disarticulation of the humerus. He discusses the connection between diphtheria and the two other affections, and concludes from experiments made by different observers, that a complete identity between the etiological influence and results of faucial diphtheritis and septic inflammation cannot as yet be proved, though probably an etiological relation between them does exist.

Weickert ('Jahrb. f. Kinderheilk.,' liii, 332) gives a case with autopsy of diphtheria and hæmorrhagic pneumonia in a female child seven days old.

Politzer (ib. 338) also gives a case with autopsy of diffuse puriform meningitis and purulent deposits in the joints after a diphtheritic conjunctivitis of the left eye in a female child of 4½ months.

Hirschberg ('Berl. Klin. Woch.,' 1869, 27), writing on the etiology of diphtheritis conjunctivæ, relates that of fifty-four cases observed for a year and a half in Von Graefe's clinique, thirteen were adults, the rest children, chiefly between the ages of two and five years. In the former the affection was always local, and in six at least seems to have been due to gonorrhœa (!), and in one case only was it dependent on a severe diphtheritic stomatitis and pharyngitis. Among the children, the majority of cases, besides a number of sporadic ones, occurred epidemically, with varying intensity. In the first three of them only was it complicated with angina diphtheritica; though at the same time angina, measles and scarlet fever were relatively less frequent in

the town. Death occurred in several cases from gastro-intestinal catarrh, and in one from broncho-pneumonia. In the last case the diphtheria of the conjunctiva occurred in the incubation stage of measles. A temperature of 39° C. was sometimes reached in the children, without the presence of any complication. In nearly all the cases in the last epidemic could be recognised a connection of ophthalmia with diphtheria of the fauces, measles, and varicella, but not with smallpox. The simultaneous occurrence of diphtheritic angina and conjunctivitis was the least frequent (two very severe cases died); cases in which the angina preceded the ophthalmia were also rare. The most common were those in which the angina followed from one to four weeks after the conjunctivitis, and in which the patient's life was always preserved.

Küchenmeister (ib., 532) gives the results of numerous experiments made with reference to the solubility of diphtheritic membranes in lime water, caustic potash, lactic acid, and lactate of lime in different degrees of concentration: he concludes—1. Lactic acid makes the membrane very viscous and tenacious; when inhaled it is objectionably pungent, and makes the mouth and lips sore. If the membrane swollen and hyaline from the lactic acid is placed in a solution of soda, it again becomes firm and opaque. 2. Salts of lactic acid, as for instance those of soda and lime, have no effect. 3. Lime water alone is an excellent medium for dissolving the membrane, most quickly and completely in a solution of from 0·25 to 0·5 lime water to 4·0 of distilled water. 4. Very marked power of dissolving is possessed by liquor potassæ. Two drops in four grammes of water are quite sufficient. 5. The membrane is dissolved most quickly and lastingly by a mixture of lime water and a caustic alkali. He considers the pulverisation on Siegle's principle the only rational mode of employing the drugs.

Albu (ib., 50) reports on the good effect of lime-water injections into the larynx and trachea in extensive laryngeal diphtheria. He introduced them by means of a syringe, the canula of which was pushed in between the cartilages of the trachea. No suffocative attacks followed. It caused violent coughing, and the child almost immediately expectorated shreds of diphtheritic membrane. He believes that five children, all under five years, were kept alive by this method several hours longer than they were expected to live. The same writer ('Deut. Klin.,' 1869, 290) gives a case in which the same means were employed in a girl, æt. 4½.

Steiner ('Jahrb. f. Kinderheilk.,' iv, 34) does not think that either the theory of general blood-poisoning in diphtheria, or that of a primary local affection set up by the presence of vegetable parasites, can be satisfactorily proved. He gives a number of cases treated by him, in the winter of 1869, with different drugs (lime-water, lactic acid, sesquichloride of iron, spirits of wine, and sublimed sulphur), and concludes that the most successful results were obtained by the local employment of lime-water, and internally quinine, chlorate of potash, and wine; in laryngitis, by emetics, and, when these are useless, tracheotomy. The subsequent paralysis disappears under tonic treatment, or even without any treatment at all.

Letzerich ('Virch. Arch.,' xlv, 327) argues in favour of a purely epiphytic character as the essential part of the disease; he even assigns the genus to Zygodesmus (*Z. fuscus*), belonging to the family Cladosporidæ.

Leube ('Deut. Arch.,' vi, 266) contributes a case which bears upon the action of the larynx. While the movements of the cords in respiration and phonation were normal, or, perhaps, slightly inactive, the epiglottis stood completely erect, leaning against the tongue, and remaining in this position. There was complete anæsthesia of the mucous membrane of the larynx; no reflex movements were provoked by touching the epiglottis, aryteno-epigottidean folds, the false cords, and arytenoid cartilages, or even the free margin of the vocal cords; only when the sound had passed below the glottis did fits of coughing occur. Thus, solids and fluids produced no reflex action in the upper and middle parts of the larynx, though sometimes after swallowing fluids cough was provoked, especially if they got below the glottis. The patient was nourished by the œsophageal tube alone for ten days, in which time 0·015 grm. of strychnine were injected daily under the skin. By this treatment the above condition had at the end of that time disappeared. She could eat without coughing; and the laryngoscope showed strong reflex movements on touching the mucous membrane over the vocal cords, and a distinct rising and falling of the epiglottis.

Gerhardt ('Berl. Klin. Woch.,' 1869, 45) gives a case of diphtheritis in a woman, æt. 26, with paralysis of the apparatus closing the larynx, and long-continued diphtheria of the sinus pyriformis (sacculus laryngis), cured by faradisation of the larynx. The patient was fed exclusively by the œsophageal tube for thirty-two days.

Gray ('Med. Times and Gaz.,' 1869, i, 141) publishes a case of a boy, æt. 9, who died from the secondary toxic effect of the diphtheritic poison on the nerve centres. He was admitted into hospital with debility, dull, pale skin, vacant expression, ptosis of left eyelid and outward squint of left eye, and ataxic gait. The only history obtained was one of "cold on the chest" eight weeks before; two days before death he swallowed with difficulty. and could not expectorate the mucus which loaded his bronchi, and the day before, it was ascertained that at and after the time of his illness he had had sore throat, difficulty of swallowing and regurgitation of fluids through the nose. The autopsy showed no morbid appearances whatever.

Orr ('Glasg. Med. Journ.,' 1869, 395) reports four cases of nasal diphtheria occurring in the same family, in children of the ages of 7 months, 2½, 4½, and 9 years, the two youngest dying under the exhaustion of the disease. The earliest symptom in the three first cases was a very acrid discharge from the nose, with fever. Gairdner adds, at the end of the paper, another fatal case of the same kind in a baby.

Ullersperger ('Journ. f. Kinderkrank.,' 1870, lv, 451) quotes from Gallucci that an epidemic of Angina diphtherica in Ibrail, a Roumanian town on the Danube, with about 30,000 inhabitants, had latterly attacked 700 individuals within sixteen months, the fatal cases being 50 per cent.

Pappenheim. "Das Verhalten der Diphtheritis zu den Witterungsverhältnissen und etliche daraus sich ergebende Folgerungen über das Wesen jener Erkrankung," 'Journ f. Kinderkr.,' 1870, 338. "Diskussion über die Tracheotomie beim Krup, das zarte Alter ist keine Kontraindikation," ib., 433. "Kubeben und Kopaivabalsam gegen Diphtheritis und Krup, Polyp im Kehlkopfe, Tracheotomie," ib., 313. Felix, "Beiträge zur Kentniss der epidemischen Diphtheritis," 'Wien. Med. Woch.,' 1870, No. 36. Roser, "Zur Verständigung über den Diphtherie-Begriff," 'Arch. d. Heilk.,' x, 103. Classen, "Ueber das Wesen der Diphtherie," 'Centralbl.,' 1870, 470. Oran, "Note sur le Traitement du Croup," 'Gaz. Hebd.,' 1870, 470. Bergeron, "De l'Emploi du Cubèbe dans la Diphthérie a l'Hôpital Sainte Eugénie," 'Gaz. des Hôp.,' 1870, 105. Mercier, "Nouveau Mode de Traitement de l'Angine Diphthérique Épidémique," ib., 1869, 569. Johnson, "The Indications for Tracheotomy in Laryngitis and Diphtheria," 'Brit. Med. Journ.,' 1870, i, 50. Wilks, "Clinical Remarks on Croup," ib., 621. And cf. different papers discussing Johnson's views on the Pathology of Croup, &c., in the same volume. Goodfellow, "Case of Croup, Tracheotomy, Death," 'Med. Times and Gaz.,' 1869, ii, 572. Paton, "Three Cases of Tracheotomy (two of Croup and one of Diphtheria, the last and one of the first fatal)," 'Lancet,' 1869, ii, 339. Stewart, "On two cases of Diphtheritic Paralysis simulating Locomotor Ataxy," 'Edin. Med. Journ.,' xv, 988.

The Respiratory Murmur.

Benson ('Dubl. Journ.,' xlviii, 127) after referring to the first descriptions by Cheyne, in 1818, of ascending and descending respiration, which Stokes considered to be pathognomonic of fatty degeneration of the heart, and which, more recently, Little holds to be produced by a loss of balance between the two ventricles, gives the case of a girl aged nineteen in whom the phenomenon was present. She had disease of the mitral valve, and, a fortnight after admission, became hemiplegic on the left side. The periods of apnœa and respiration were equal, each lasting for fifteen seconds, and each one separated from the other by the same length of time; so that each minute was divided into four periods, two of perfect apnœa and two of puerile respiration. This form of breathing was present only while the patient was allowed to remain in a semi-comatose state. The autopsy showed, in addition to the mitral mischief, hæmorrhage into and softening of the right corpus striatum. Benson thinks that this respiration must be considered in great part a nervous phenomenon.

Lutz ('Deut. Arch.,' viii, 123) records the occurrence of the same phenomenon in a boy æt. 5 years, during an attack of scarlet fever.

Fraentzel ("Ueber das Cheyne-Stokes'sche Respirations Phænomen," 'Berl. Klin. Woch.,' 1869, 277) publishes the case and autopsy of a man æt. 32, in whom there was no fatty degeneration of the heart, and in whom the same phenomenon was present. After briefly reviewing the views of Cheyne, Stokes, and Schriff, he gives those of Traube, who has observed it in cerebral hæmorrhage, cerebral tumours, in uræmic coma, and in the third stage of tubercular meningitis, under conditions in which there was not even a history of vascular disease, much less of fatty degeneration of the heart. He found it present also in sclerosis of the coronary artery. He considers that it arises from a deficient flow of arterial blood to the medulla oblongata, the seat of the centre of the respiratory nervous system, and will occur, therefore, whenever, in consequence of greatly diminished oxygen supply, the

irritability of the nerve-cells in connection with the respiratory centre is very greatly lessened, so that it requires a much larger amount of carbonic acid to cause an inspiration than under normal conditions. He compares it with the results obtained by section of the vagus in the neck, concluding that, in consequence of the diminished irritability of the respiratory nerve-centre, the normal amount of carbonic acid can provoke no inspiration. To effect this, an abnormally large quantity is required, and to produce this quantity a much longer period of time than normal is necessary. From a case observed by him he concludes—1, when a predisposition to this form of breathing exists in consequence of an organic defect of the heart, injections of morphia have power to cause the phenomenon immediately; 2, when this peculiar method of respiration is already in process, it may be increased by means of injections of morphia. The latter can evidently have no other influence on the respiratory nerve-centre but to lessen its irritability and so increase the influence of the deficient supply of arterial blood to the medulla oblongata.

Choynowsky ('Virch. Arch.,' xlix, 387, &c.) maintains Laennec's theory (as generally accepted in England) of the mechanical explanation of bronchial breathing (respiratio laryngea) against Skoda's well-known theory of consonance.

Bergeon ("Des bruits physiologiques de la respiration," 'Compt. Rend.,' t. 68, p. 431) gives the results of his experiments on animals on which tracheotomy had been performed. He concludes that the inspiratory murmur has a double seat, the glottis and lungs; the expiratory only one, the glottis; the former caused by the air-currents passing the glottis and in the pulmonary alveoli; the latter by the air breaking against the superior vocal cords and the base of the epiglottis. This makes the expiratory murmur more intense than the inspiratory, formed only by a narrowed orifice.

In a paper on the origin of the continuous râle, Baas ('Deut. Arch.,' vii, 118) draws attention to what he calls the "post expiratory râle," which he observed in two cases, and which he considers to be pathognomonic of a cavity.

With Bergeon's paper may be compared Paul Niemeyer's theory as to the origin of the inspiratory and expiratory murmur ('Deut. Arch.,' vii, 143).

Mediastinal Tumours.

Riegel ("Zur Pathologie und Diagnose der Mediastinaltumoren," 'Virch. Arch.,' xlix, 193) collects thirty-six cases of mediastinal tumours recorded by different authors, reviews the general literature on the subject, and gives, in full, a case occurring in the practice of Bamberger. He finds carcinoma and sarcoma most frequent. The growth of the tumours was variable, very frequently sudden and rapid; most commonly they invaded neighbouring organs, seldom only displaced them. They were more frequent in males than females, in the proportion of 2·4 : 1. The majority occurred between the ages of twenty and thirty. Special symptoms were—absence of pyrexia; more or less

bulging of the sternum; asymmetry of the two sides of the thorax; displacement of the heart, &c.; cyanosis and œdema of the face and upper extremities from compressed vessels, and difference of pulse on the two sides; sometimes enlarged thyroid, with more or less exophthalmos; symptoms caused by pressure on the trachea or œsophagus; in the majority of cases enlargement of the neighbouring glands. To these were added pains of various degrees in the affected region, dyspnœa increased to true orthopnœa, and a cough, at first dry, later with purulent and sometimes blood-streaked expectoration.

Bennett, in his lectures on "The Natural History and Diagnosis of Intra-thoracic Cancer" ('Brit. Med. Journ.,' 1870, i, 541, &c.), refers to various cases of mediastinal tumours, and records (ib., ii, 1) an almost unique case occurring in a young man æt. 19, who had, for some time, paroxysmal attacks of dyspnœa, which became more frequent for three days before his death. Some diffused enlargement at the base of the neck was noticed during life. The autopsy showed great enlargement of the thyroid body, the lateral lobes of which had passed down behind the top of the sternum, had twisted the trachea to the left, and compressed it in such a way that, below the opening made in tracheotomy, it was completely flattened laterally to within half an inch of the bifurcation.

Pleurisy, &c.

Laveran ('Rec. de Mém. Milit.,' 1869, xxiii, p. 425) publishes the following:—A healthy man, æt. 39, was admitted into hospital, July 29th, 1869, having been ill for eight days, without jaundice or fever; there was dulness of the right thorax as high as the nipple, and the liver was lower than normal. He complained of pain in the hepatic region and right shoulder. On August 1st he was emaciated and anæmic, still without fever, vomiting, or abdominal pain. On the 2nd he was suddenly attacked with violent pains in the right side and dyspnœa. On the 4th percussion gave a tympanitic sound under the right clavicle, accompanied, on the 5th, by amphoric breathing in the right supra-spinous fossa and increased dyspnœa. To these signs was added, on the 7th, dulness on the right side behind, mounting as high as the angle of the scapula. In the right hypochondrium the skin was red and œdematous, not painful on pressure, and presenting no fluctuation. On the 9th there was orthopnœa, diarrhœa, and increased heat of skin; on the right chest, above the nipple, the skin was red and raised; with this was emphysema of the cellular tissue, reaching to the base of the neck. Small punctures made with a lancet gave exit to a very fetid gas, and on the 11th to pus as well, which had a gangrenous odour. The dulness increased, and the patient gradually became collapsed and died on the 14th. The autopsy showed the right side filled with pus, the costal pleuræ uniformly covered with false membrane, and perforated at the level of the third and fourth intercostal spaces, and at the attachment of the diaphragm to the false ribs; the right lung compressed (carnified), but nowhere perforated. The diaphragm was thickened and indurated over a portion of its right half, its muscular tissue and its attachments destroyed, so

as to show the upper surface of the liver, to which it was strongly adherent. At the anterior and superior part of the right lobe of the liver was a thick layer of pus—an abscess between the liver and diaphragm, which communicated freely with the pleural cavity, and was bounded by peritoneal adhesions, except in front, where it ran round the anterior border of the liver to join another abscess at the inferior surface of that organ. This second abscess was circumscribed by the liver, the duodenum and transverse colon, and peritoneal adhesions. There was no perforation of the intestine, but the walls of the duodenum were thickened, slightly indurated, and very friable, those of the colon thinned and tearing on the least traction. The peritoneum, with the exception of the circumscribed peritonitis, was healthy.

Bergeret ('Lyon. Méd.,' vi, 228) gives the case of a man, æt. 26 who, during convalescence from typhoid fever, was attacked with pleurisy of the right side, with considerable effusion. Paracentesis was performed with a trocar attached to a bladder. In spite of all care to prevent it, bubbles of air entered the chest, leaving it again on expiration. The patient did well, and the author holds that the effect of the entrance of a little air has been much exaggerated.

Peter ('Gaz. des Hôp.,' 1869, 13) enlarges upon the diagnostic, prognostic, and therapeutic value in pleurisy of the so-called curve of Damoiseau (*i.e.* the line which, under certain conditions, may be made out on the posterior part of the thorax). He believes that by it a fibrinous may be distinguished from a serous exudation, and that its continued existence is a good sign, inasmuch as a fibrinous effusion is more easily reabsorbed than a serous one.

Dupré ('Bull. de l'Acad. de Méd.,' xxxiv, 205) gives an account of seventy-six cases of so-called sero-plastic and rheumatic exudation, in which he performed thoracentesis; eight only died. He proposes three principal divisions of pleurisy—1, essentially inflammatory effusion, generally recovering without operation; 2, secondary accumulations (hydrothorax), in which the operation is useless; 3, primary idiopathic effusion, to which he gives the above names. These last commence sometimes with rigors and thoracic pain, sometimes they directly follow articular pains or sciatica. The thoracic pain is superficial, extensive, wandering,—"rheumatism of the pectoral muscles;" the effusion takes place without pain, distress, cough, dyspnœa, or fever. These pleurisies were described by Pidoux, among other writers, as "latent." Medical treatment is useless, and the trocar should be resorted to as promptly as possible.

Duroziez (ib., 371) gives a case of sudden and considerable expectoration, simulating the evacuation of an empyema, in a man, æt. 32.

Of ten cases of paracentesis thoracis under Peter ('Brit. Med. Journ.,' 1869, ii, 475), cure was complete in seven; in one case, complicated with scarlatina and tubercular disease, there was amelioration; and in two cases in which death occurred, the operation prolonged life and afforded great relief, the fatal issue being caused by the primary disease; the ages of the patients, except one (a drayman, æt. 47, who got well), are not given.

A paper on pleuritic effusion (ib., 1870, ii, 65) contains three case

in males of sixteen and forty years and "middle age," who were discharged well in the course of a month or six weeks; one in a female, æt. 43, with granular kidneys and forty ounces of pus in the left pleural cavity, who died suddenly; and a fifth case, in a male, on whom paracentesis was performed eight times. Sutton's remarks on these cases point to the following conclusions:—1. That pleuritic effusion of recent origin may disappear when treated by absolute rest, without tapping. 2. That tapping is urgently demanded when the effusion consists of pus. 3. That the difficult and frequent respiration by which the presence of pus is accompanied, and not the quantity of the fluid, is the best guide for tapping. 4. There is strong evidence that the pleura may be tapped and air admitted without any ill effects following.

In reference to the case of a boy, æt. 7 ('Lancet,' 1870, i, 8), whose chest was tapped on the twelfth day of an attack of acute pleurisy, Murchison remarks that the main object of the operation is the restoration of the position of the heart, as there is far greater danger, especially when the pleuritic effusion is on the left side, of the patient dying from sudden syncope than from asphyxia.

Paley ('Brit. Med. Journ.,' 1870, i, 6) publishes two cases; one in a girl 10½, who had double pneumonia and pleurisy of right side after measles, and was tapped twice in ten days, a drainage tube being kept in for six days, and the wound not closing completely for four months; the second in a boy of the same age, who had been twice tapped for pleurisy of the left side. After the third operation a tube was kept in for fourteen days. In both cases there was, later, very little falling in of the chest-walls, with good resonance and respiratory murmur.

Jacobi ('Deut. Archiv,' vii, 447) gives the following:—A woman, æt. 39, was attacked with pleurisy in the right side in the fifth month of her third pregnancy, and was tapped, eighty-four ounces of good pus being evacuated, and a catheter being used to empty the cavity for some time afterwards. The entrance of air did no harm, and the wound was allowed to close two months after the operation. Five days, however, after delivery of a child, there was a recurrence of pain in the right side and dyspnœa, with redness and tenderness in the neighbourhood of the wound. The abscess was opened, a catheter again employed, and, as the secretion had been very copious and fetid, probably from some contamination in connection with the puerperal state, the cavity was rinsed out, at first twice daily, with warm water. The secretion became speedily less in quantity and normal, then ceased almost altogether, and the wound was allowed once more to close. Seven and a half months after the operation the only noticeable fact seems to have been deficient rising of the thoracic walls on inspiration on the right side as compared with the left.

Vogel ('Berl. klin. Woch.,' 1869, 489) considers puncture better than incision in some cases. Preferring a method by which after simple puncture the pleural cavity may be well and sufficiently cleaned out, and thus all evil consequences from retention of the pus formed for a longer or shorter time avoided, he describes the procedure adopted by Kussmaul for this purpose. In the majority of cases, especially in young patients, the simple introduction of an elastic

catheter with sufficiently large openings would be enough; the external end of the tube is placed in a glass containing water, and the cleansing of the cavity left to the respiratory movements of the thorax. He describes the necessary variation in this method when Schuh's trocar has been used, &c. He describes also Kussmaul's "sonde à double courant," and publishes two cases in which it was employed with success, and a third in which he considers incision would have been preferable to puncture. The occurrence of arterial bleeding in one of the cases leads him to call attention to the sometimes abnormal course of the internal mammary artery.

Potain ('Gaz. des Hôp.,' 1869, 356) employs an apparatus somewhat of the same kind, except that, instead of the "sonde à double courant," he introduces two tubes of caoutchouc into the pleural cavity and connects their external ends with two vessels.

Blachez (ib., 45) gives several cases in which his method of capillary thoracentesis was practised, and Blois (ib., 70), in the course of a discussion on the priority of using this method, gives two thus treated, one in 1864. The latter writer allows the inconvenience of the capillary trocar in the slow emptying of the fluid.

De Latour ('L'Union Méd.,' vii, 326) records a case of acute right-sided pleurisy in a man æt. 40, with very rapid exudation, in which he obtained remission of all the symptoms and decrease of the exudation after three hours by covering the whole side with a layer of collodion (!).

Ziemssen ("Die Punction des Hydrothorax," 'Deut. Arch.,' v, 457) publishes his remarks on hydrothorax made before the Society of Naturalists at Innspruck. He adds full particulars of a case he then mentioned, of a man, suffering from Bright's disease, who was punctured sixteen times in three and a half months. Before the first operation the patient was semi-comatose, had cold extremities, and a pulse scarcely to be felt. In the course of the sixteen tappings 11,945 litres, containing 200 grammes albumen, were drawn off, and there was distinct relief after each evacuation.

Heddæus ("Diagnostische Irrthümer," 'Berl. klin. Woch.,' 1869, 551) gives very fully the case and autopsy of a strong man, who was attacked with left-sided pneumothorax in consequence of a cold, followed by pleuritic exudation, which was twice emptied, with improvement of the health, after proper exit for the pus was obtained. A few months later the pus again became fetid, the pyrexia increased, and the patient became rapidly emaciated and died. He believes that life might have been saved by an earlier puncture, and that in cases in which exudation recurs a short time after operation the latter should not be repeated, but a fistula at once established, so that the lung may recover itself as soon as possible.

Förster ('Deut. Arch.,' v, 545) publishes the case of a healthy woman of twenty-eight, who, while quietly conversing, was suddenly seized with violent pain in the right side, and fainted. In spite of this, she walked about 900 paces and up four flights of stairs to her room. On examination there was only moderate dyspnœa, right-sided pneumothorax, and slight fever. She complained of palpitation; the heart was pushed over to the left. A fortnight later there was slighter dulness

over the lower part of the right side behind, which disappeared after a few weeks under the employment of iodine ointment and cod-liver oil. All traces of the pneumothorax had disappeared three and a half months after its first appearance.

Moore, "Obscure case of Pleuritic Effusion," 'Med. Press and Circ.,' 1869, i, 141; ib., "On Pleurisy with Effusion in Children, Displacement of the Heart, Empyema Necessitatis, Superficial Tumour, Recovery," 'Brit. Med. Journ.,' 1869, i, 4. Moxon, "Case of Acute Pleurisy, Sloughing of Lung, Abscess in Mediastinum, Pericarditis, Jaundice," 'Med. Times and Gaz.,' 1869, i, 489. Roux, "Empyème datant de trois mois, Modification du procédé opératoire, guérison d'emblée par un seul injection," 'Bul. Gén. de Thérap.,' t. 76, p. 412. Potain, "Des Difficultés que peut rencontrer l'évacuation compléte du Liquide dans l'opération de l'Empyème," ib., t. 77, p. 66. Nolle, "Épanchement pleuritique purulent traité deux fois pas la Thoracentèse et le Drainage," 'L'Union Méd.,' viii, 622. Orsi, "Caso gravissimo e complicato di empieme sinistro, felicimente trattato colla toracentesi nella Clinica Medica di Pavia, nel mese di maggio, 1868," 'Gaz. Med. Ital. Lomb.,' 1869, 9, &c. Hayden, "Limited Empyema on Right Side, Evacuation in Right Hypochondrium, Recovery," 'Dub. Quart. Journ.,' xlvii, 225. Courbon, "Abcès des lombes, produit par un empyème simulant un anévrysme," 'Gaz. des Hôp.,' 1870, 237. Powell, "Notes on Paracentesis Thoracis," 'Brit. Med. Journ.,' 1870, i, 168. Hill, "Three Cases of Thoracentesis," ib., ib. Jenner, "Hereditary Tendency in Tubercular Phthisis, Question of Paracentesis Thoracis," 'Lancet,' 1870, ii, 119. Clark, "Case of Empyema treated by Paracentesis and subsequently by Blistering," ib. i, 7. Barwell, "A Case of Pyæmia with Pneumothorax, Death by Coma," 'Med. Press and Circ.,' 1869, i, 266. Powell, "Lung, showing Perforation from a case of Pneumothorax," 'Trans. Path. Soc.,' xix, 77. Id., "Case of Pneumoth. with Congenital Opening in the Pericardium," ib., xx, 99. Id., "Notes on the Pneumoth. occurring in Phthisis," 'Med. Times and Gaz.,' 1869, i, 112. Id., "Cases illustrating the manner in which the Heart is displaced in Pneumoth.," ib., ii, 209.

Bronchitis and Emphysema.

Lebert ('Deut. Arch.,' vi, 74) gives a full summary of all the recorded cases of—(1) acute fibrinous bronchitis without fibrinous expectoration; (2) the same affection with fibrinous expectoration; (3) fibrinous pneumonia; (4) chronic fibrinous bronchitis; (5) chronic symptomatic bronchitis; and ends his paper with his own conclusions in full as to these affections.

Waldenburg ('Berl. klin. Woch.,' 1869, p. 208) publishes a case of croup of the bronchi in a girl æt. 8½, who since her fourth year had been in the habit of expectorating, every second day, with great straining, firm regular masses, which under water spread out into tree-like, dichotomously branched forms, from three to four inches long. The child was ordered whey, and in addition inhaled lime-water from a steam pulverisateur for a quarter or half an hour daily. After forty-five inhalations the child was well and remained so for a year, and then, on catching a severe cold, expectorated the mucous sputa of simple bronchitic catarrh. The child seems also to have had impetigo capitis, and the author makes the suggestion whether there was in this case some nosological connection between the skin eruption and the bronchial croup.

Armand ('Lyon Méd.,' 1870, iv, 544), at the autopsy of a man who had expectorated for some time fibrinous casts of the bronchi, found the latter filled with gelatinous filaments, their mucous membrane red and hyperæmic, but not presenting any ulceration.

Laure (ib., iii, p. 41) also showed to the Société des Sciences Médicales membranes of the same kind, measuring about a centimètre across the diameter of the primary trunk, and showing under the microscope a vaguely fibrillated network, in which leucocytes and mucous globules were irregularly imbedded. Their expulsion was generally preceded by an attack of dyspnœa, and accompanied by slight hæmoptysis. Auscultation revealed numerous small subcrepitant râles over the lower two thirds of the right lung; nothing abnormal in the left.

Lebert ('Berl. klin. Woch.,' 1869, 53, &c.) gives, in a long paper on the etiology of catarrh of the respiratory organs, a statistical collection of the cases which had come under his notice from 1853 to 1859 at Zurich, and from 1860 to 1867 at Breslau. It includes 25,531 cases, of which 6904 occurred in the hospital at Zurich, 4068 in that at Breslau, and 14,559 among the out-patients of the latter place. He holds that the irritation set up by the inhalation of particles of dust plays no part in acute idiopathic catarrh, but is of importance in the chronic affection and the subsequent lung-changes. From the same point of view he considers the influence exercised by habitual straining of the voice on the two affections.

Fitz ('Virch. Arch.,' li, 123), in a short and valuable paper, gives the result of careful microscopic examination of two cases of bronchiectasis. He found the cartilage with great increase of its cells and numerous lines of fibro-cellular vascular tissue running through it. The intercellular substance was not fibrillated or otherwise changed, except when the whole tissue was thus destroyed and replaced by another. In the mucous membrane the mucous glands were surrounded by a kind of granulation-tissue, and in some parts were so compressed by it that they, in common with the epithelium, had become atrophied, so as to leave the dilated bronchi lined only by a vascular corium.

Greenhow, "On Chronic Bronchitis, especially in connection with Gout, Emphysema, and Diseases of the Heart," London, 1869. Id., "Pulmonary Emphysema in connection with Gout," 'Lancet,' 1869, i, 455. Fleming, "Chronic Bronchitis with dilated Heart," 'Brit. Med. Journ.,' 1869, i, 541. Charrier, "Note sur la Bronchite chronique et son traitement," 'Bull. Gén. de Thérap.,' t. 77, 492. Ferber, "Der Niesekrampf und dessen Beziehung zur Migräne, zum Bronchialasthma, und zur Heufieber," 'Arch. der Heilk.,' x, 567. Duffin, "Bronchiectasy involving the Apex of the Left Lung," 'Lancet,' 1870, i, 874.

Foreign Matters in the Lungs.

Merkel ('Zwei Fälle von Siderosis pulmonum," 'Deut. Arch.,' vi, 616) records the following:—An ill-nourished female, æt. 26, had been working nearly a year in a gold-leaf factory; her sputa were nummular, of a dirty yellow colour, with fine reddish streaks, in which were found particles of iron, partly free, partly enclosed in large round cells. The autopsy showed cheesy degeneration of the lungs. The deposit, which was proved chemically to consist of oxide of iron, was found mostly in the lobular and infundibular septa and the smaller bronchi. The author believes that the phthisis in this case was not set up by the inhalation of iron, but was prior to it. The autopsy of the second case, occurring

in a man, æt. 22, who during life had exhibited the signs of general catarrh of the lungs, showed scattered nodules in the lungs, which under the microscope were seen to be made up of small round and fusiform cells, in which granules of iron were scattered. He considers that this case confirms Zenker's view that the induration in such cases occurs as a consequence of the irritation set up by the particles of iron. In conclusion, he refers to the case of a man, æt. 21, whose blue sputa contained particles of ultramarine, partly free, partly enclosed in large round cells. After fourteen days' stay in hospital only the latter were found.

Slavjanski ('Virch. Arch., xlviii, 326) made experiments on rabbits and guinea-pigs by injecting water holding vermilion (cinnabar) in solution into the lungs, through a hole in the trachea. On killing the animals no inflammation was found, but the lungs and bronchial glands presented red patches. After injection with size and Berlin blue sections were made and treated with nitrate of silver, after Chrzonszczewsky's method, and it was found that the red particles were present, not only lying free and irregularly in the interstitial tissue, but also in the cells which filled the alveoli. These cells Slavjansky considers to be, not epithelial, but immigrated white cells, which have become mucous corpuscles.

Böttcher, "Ueber Lungmelanose," 'St. Pet. Med. Zeit.,' xvi, H. 2.

Pneumonia.

Morehead ('Edinb. Med. Journ.,' xv, 1003) argues in favour of the theory that the capillaries derived from the bronchial arteries are those primarily affected in pneumonia. He combats the views expounded by Waters in his work on the anatomy of the lung, and applies his own theory to explain the clinical facts of the affection. He concludes with a similar exposition of hepatitis, which he considers to depend upon deviation from their normal function of the capillaries of the hepatic artery.

Grimshaw ('Dubl. Quart. Journ.,' xlvii, 335), after reviewing the thermometric observations of others on pneumonia, gives the results of his own. He concludes that uncomplicated pneumonia has a tolerably definite range of temperature; the highest attained is usually between 103° and 104° F., generally on the fourth or fifth day, after which it falls, and reaches the normal standard on the sixth or seventh day. The height of the thermometer does not necessarily show the intensity of the disease; its fall does not indicate the cessation of mischief, but only that it is about to enter on the third stage. If a high temperature is maintained for a long time (more than three or four days), or a fresh rise takes place, an attack in a previously healthy part or some new complication may be expected. The temperature and pulse usually, though not always, rise and fall together. The temperature commonly falls before the frequency of the respiration diminishes. A high temperature before the sixth day in a doubtful case generally proves it to be one of pneumonia, and not of typhus (typhoid?).

Waters ('Med. Times and Gaz.,' 1869, ii, 612) read a paper before the Med. and Chir. Society founded on the results of treatment in 53 consecutive cases under his care in hospital, all, with the exception of two, males. One case was under ten years, 7 between ten and twenty, 25 between twenty and thirty, 12 between thirty and forty, 7 between forty and fifty, and 1 between fifty and sixty. One lung only was attacked in 44, both in 9. Of the former, the right lung was affected in 20, the left in 24. Of the latter, the left was most involved in 6, the right in 1. The average duration of 41 cases in which the commencement could be ascertained was eleven and a half days. One case only died. Venesection was not practised; 3 only were cupped and 2 only had leeches applied. Antimony was given in 20 cases in small doses; beef tea, milk, and alcohol, were ordered freely. The author gives a general summary of his opinions on the treatment. He believes that mild counter-irritation is useful in the early stages, and blisters frequently in the latter.

Welch (ib., 669) gives a summary of 52 cases occurring in the winter of 1866-67 in a regiment stationed at New Brunswick, North America; the ages were between seventeen and thirty-four; the right lung was involved in 21, the left in 16, and both in 15. Of the single affection, one lobe was attacked in 32 (19 right, 13 left), two thirds in 3 (1 right, 2 left), and the whole lung in 2 (1 right, 1 left). Of the double pneumonia, the disease was limited to the lower lobes in 13; in 2, both fatal, the whole of the right and the greater part of the left were involved. The average duration from the first symptom to complete recovery was 17·2 days. The treatment employed consisted of cupping, diaphoretics, narcotics, and free administration of fluid nutriment and alcohol.

Gros ('L'Union Méd.,' 1869, viii, 172) publishes 4 cases, 3 in children, in which he obtained complete success by the administration of alcohol in the form of sherry, brandy, Frontignan, and Madeira. In all the cases it was given when the pulse was very feeble or not to be felt, and the patients more or less cyanosed.

Balfour ('Lancet,' 1869, i, 494) records 3 cases of pleuro-pneumonia in which, in addition to a mixture containing ipecacuanha and opium, an emulsion of one drachm of chloroform and seven drachms of olive oil was given every four hours. He holds that it diminishes the pyrexia and pulse, but does not relieve the pain, for which reason he orders the former draught.

Zuber and Hirtz ('Bull. Gén. de Thérap.,' t. 76, p. 468) give two cases of pneumonia treated with veratrum viride, in doses of one centigramme hourly, or thereabouts. In both the pulse, respiration, and temperature fell simultaneously.

Hirtz (ib., t. 77, 289) holds that digitalis is particularly indicated in pneumonia in the purely inflammatory fever, with a temperature of 39·41° C., a frequent pulse, and in strong and young subjects. It is well supported by children, women, and persons of advanced age, if they are not debilitated. He does not exclude other methods of treatment; bleeding he considers indicated in imminent asphyxia and extreme congestion; veratrum acts quicker than digitalis, especially on

the pulse, though less so on the temperature, and its effect passes off more quickly. Tartarated antimony he does not think superior, if equal, to digitalis; sulphate of quinine wants the constancy and intensity of effect on the pulse and temperature presented by the other three drugs.

Dauvergne, "Une Pratique de quarante ans au sujet de la Pneumonie," 'Bull. Gén de Thérap.,' t. 76, 339, &c. Peter, "Saignée et Pneumonie," ib., 555, and 'Gaz. des Hôp.,' 1869, 245. Dauvergne, "Encore un mot sur la Pneumonie et la Saignée à propos d'une leçon de M. Peter," ib., t. 77, 119. Bastian, "A Case of Cirrhosis of the Lung, with some of the results of an analysis of thirty cases of this disease," 'Path. Soc. Trans.,' xix, 44. Powell, "Case of Pneumonia confined to the anterior base, with remarks on Chronic Basic Pneumonia," 'Lancet,' 1869, ii, 609. Bennett, "On Pneumonia," ib, i, 603. Maclagan, "Thermometric Observations on Pneumonia," 'Edinb. Med. Journ.,' xiv, 684. Sturges, "Clin. Lect. on Pneumonia," 'Med. Times and Gaz.,' 1869, ii, 271. Heale, "The Physiological Rationale of Pneumonia and Bronchitis," ib., 611. Ogle, "Pneumonia, Venesection, Recovery," ib., 1870, i, 521. Stokes, "Pleuritis, Sthenic Pneumonia of Right Lung, Venesection, rapid Recovery," 'Brit. Med. Journ.,' 1870. i, 627. Sturges, "The Diagnosis of Pneumonia, and its treatment by restoratives," 'Practitioner,' iv, 321. Handfield Jones, "Two Cases of Pneumonia complicated by Nephritis," 'Lancet,' 1870, ii, 14.

Phthisis.

Niemeyer's views ("Einige Bermerkungen über das Verhältniss der Hämoptoe zur Lungenschwindsucht," 'Berl. klin. Woch.,' 1869, 169) on the relation of hæmoptysis to phthisis have become more or less known during the past two years, and it will be sufficient to refer here to his conclusions:—That all patients who suffer from hæmorrhage from the capillaries of the bronchi and lungs neither are nor need become consumptive; that phthisis frequently follows such hæmorrhages, without the existence of any genetic connection between the latter and the pneumonic processes, which, as a rule, form the starting-point of pulmonary phthisis. Patients with a tendency to these hæmorrhages are liable also to inflammation. Hæmoptysis frequently lays the foundation for phthisis in individuals in whose lungs neither tubercles nor pneumonic deposits occur, from the fact that the blood remaining in the alveoli, and the products of inflammation provoked by it, undergo the cheesy metamorphosis. In the same way hæmorrhage from the bronchi and lungs frequently accelerates the course of an already existing phthisis. In some rare cases the hæmoptysis is not the cause, but the consequence, of pneumonic processes, which lead, in their further development, to consumption. Such cases are easily recognised as a generally severe pyrexia, and other symptoms of an inflammatory nature accompany or precede the hæmoptysis. The blood remaining in the alveoli and, as above, undergoing the cheesy transformation, frequently gives rise to an eruption of miliary tubercles.

Bäumler ('Clin. Soc. Trans.,' ii, 83) gives three cases which seem to support Niemeyer's views; in the first two the inflammatory changes terminated in almost complete resolution; in the third the infiltration of the lung-tissue was permanent. He concludes that profuse hæmoptysis is in some cases followed by a more or less extensive

bronchitis, especially of the smaller bronchi, and by inflammation of the lung-tissue; these inflammatory changes are capable of complete resolution, or they may lead to a permanent infiltration and induration, with their consequences. Practically, this view implies a very important rule, that patients who have brought up blood from the air-passages or lungs ought to be very carefully watched, especially by means of the thermometer, for some days afterwards, even if the hæmorrhage have quite ceased, and, however slight the consequent symptoms be, should be kept quiet till all pyrexial symptoms have disappeared.

Weber (ib., 43) publishes three cases, one with autopsy, of a similar nature to Bäumler's, in that the lungs did not exhibit, on examination, any signs of organic disease at the time the first hæmorrhage occurred, and in that it was not till several days later that symptoms of inflammation appeared, accompanied by elevation of temperature. In two of the cases there was a great tendency to epistaxis, and he thinks that the hæmoptysis must be looked upon as analogous to that. He holds, however, that Niemeyer goes too far in asserting that cases of hæmoptysis are followed by a more or less violent irritation of the lungs and pleura, as he has seen nine cases of more or less severe hæmoptysis, in five of which no elevation of temperature or other sign of pleuro-pneumonia occurred. As regards treatment, he looks upon rest as the most essential point, and, in addition to gallic and sulphuric acids, he advises the continued application of ice bags to the chest, and ergot of rye in doses of three to six drachms of the watery extract in the twenty-four hours, and in cases where there is a tendency to hæmoptysis a prolonged residence in some elevated spot.

In a memoir translated from the 'Hospitals-Tidende,' 1869 ('Edin. Med. Journ.,' xv, 27, 228) Rasmussen gives details of several cases of hæmoptysis from a pulmonary aneurism bursting into a cavity, and, while restating his own views of its pathology, argues against those advocated by Niemeyer. In disproof of the opinion that phthisis may be the result of cheesy pneumonia set up by primary hæmoptysis, he relates three cases of the latter from penetrating wounds of the chest, which were not followed by symptoms of phthisis, tubercular or other.

Cotton ('Lancet,' 1869, ii, 741) publishes the case of a joiner, æt. 42, who died of acute pulmonary tuberculosis simulating typhoid fever. Both lungs were found studded with miliary tubercles; several of the latter were found in the liver and kidneys. Four days before death fine crepitation was heard under the left clavicle, becoming large two days later, and extending over the whole left side in front, accompanied by small crepitation on the right side.

The question whether phthisical patients, or persons disposed to consumption, should be advised to marry, opened by Hartsen of Cannes in one of his amusing letters, is taken up by Virchow ('Arch.,' xlix, 577), and decided in the negative.

Jeannin ('Gaz. des Hôp.,' 1869, 95) describes the cutaneous pigmentation often met with in phthisical patients, especially on the face, recalling the complexion of pregnant women. The most striking of the accompanying symptoms is an absence of hæmorrhage. The autopsy

in such cases shows affections of the spleen and lymph-glands, and thromboses.

Starcke ('Deut. Arch.,' vii, 212) recognised a dilatation of the lachrymal canal in a number of cases, and found that it occurred mainly in patients suffering from chronic lung affections. It appeared as a tumour at the inner angle of the eye, which swelled with each expectoration, or only in the attempt, by forcibly expiring and closing the mouth and nose, to drive air and fluid through the lower lachrymal opening. It originates, according to him, in an insufficiency of the valvular apparatus of the lachrymal canal caused by the strong and frequent expiratory movements during cough. Performers on wind instruments ought to present the affection frequently.

Isnard ('Bull. Gén. de Thérap.,' t. 77, 551) recounts what he has already written on the treatment of phthisis by arsenic, and sums up what he considers its effects to be—diminution of pyrexia and of night sweats, a natural state of skin, improvement in appetite, digestion, and nutrition, disappearance of vomiting, diarrhœa and constipation, gain of flesh. In the lung itself, cicatrization of cavities, attested, according to him, by lessened cough and oppression, diminished secretion and expectoration, and abortion of the tubercles (!).

Cersoy ('Gaz. des Hôp.,' 1869, 557) describes the local action of arsenic in phthisis, which he asserts to be a process of "décongestion." It causes a removal of the congestion, first of the bronchial mucous membrane, and next of the peritubercular lung-tissue, the latter being more slow but not more certain. He gives two cases to show this, in which the disappearance of blood from the sputa seems to have struck him with wonder.

Trélat ('Arch. Gén. de Méd.,' 1870, i, 35) calls attention to certain ulcers of the mouth and tongue ("phthisie buccale, ulcères tuberculeux"), and claims to have demonstrated their origin in the ulceration of true tubercles. They are said to have been observed in tuberculous patients, and may precede, though they generally follow, pulmonary tuberculosis. Their diagnosis is easy at all periods of the malady. They occur, without any assignable cause, as chronic, obstinate, superficial ulcers, with red irregular edges, and without any neighbouring adenitis; their depth varies, but they never present ragged and undermined edges, or hard and prominent granulations.

Brehmer's theory ('Die chronische Lungenschwindsucht und Tuberculose der Lunge: ihre Ursache und ihre Heilung,' 2te Aufl., Berlin, 1869) is that phthisis depends on a habitus characterised by a long, large chest and lungs, and a small, weak, flabby heart; and that this disproportion leads to starvation of lung-tissue, catarrhal pneumonia, and cheesy products, &c. He holds that elevated regions increase the force and frequency of the heart's action, and so cure the disease.

Weber ('Med.-Chir. Trans.,' lii, 225) publishes seventeen cases in favour of a prolonged residence in elevated regions in certain forms of consumption. Four of them terminated fatally at a later period, the rest were greatly benefited. Of the four fatal cases, autopsies were made in two, and showed that they had been cured of one attack of pneumonic phthisis and died of a second. More prolonged residence in elevated

regions would probably have led to a permanent cure in all. He concludes that elevated regions deserve greater attention as summer, but also and even more so as winter, health-resorts; they offer great advantages in many cases of early consumption, or of tendency to consumption, in the disposition to catarrhal pneumonia, and the results of this disease, particularly the so-called tubercular (cheesy) deposits and tubercular (pneumonic) infiltrations; that in such cases fresh catarrhal and other acute intercurrent affections appear to be less frequent in health-resorts at high than at low levels; that in elevated regions the tendency to absorption and fibrous transformation or cicatrization of pneumonic deposits is promoted, while the tendency to the rapid breaking down of tissue and the formation of cavities is counteracted; that the tendency to hæmoptysis is diminished, not, as is usually believed, increased. (Cf. on the subject a review of this and other papers in the 'Practitioner,' 1870, iv, p. 37.)

Williams, "The Causes of Pulmonary Consumption," 'St. George's Hosp. Rep.,' 1869, 153. Cotton, "Phthisis and the Stethoscope," London, 4th ed. Watts, "Consumption and its Cure," London, new ed. Waldenburg, 'Die Tuberculose, Lungenschwindsucht und Scrofulose,' Berlin, 1869. Peacock, "Remarks on the different forms of Pulmonary Consumption," 'St. Thomas's Hosp. Rep.,' 1870, 19. Laveran, "Tuberculose, mort à la suite d'Hématurie," 'Gaz. Hebdom.,' 1869, 166. Clarke, "Local Inflammations in certain defined conditions as causes of Pulmonary Phthisis," 'Brit. Med. Journ.,' 1870, ii, 471. Moxon, "Case of Phthisis affecting the lower lobes of the Lung," 'Path. Soc. Trans.,' xx, 32. Fagge, "Cirrhosis of the Lung," ib., 35. Greenhow, "Black Lungs from a case of Collier's Phthisis," ib., 41. Powell, "Diseased Spleen and Suprarenal Capsules removed from a case of Tubercular Phthisis," ib., 366. Thompson, "Phthisis, death from internal hæmorrhage," 'Med. Times and Gaz.,' 1870, i, 550. Powell, "Three cases of Phthisis with Contracted Lung," 'Clin. Soc. Trans.,' ii, 181. Mollière, "Phthisie Pulmonaire à forme Typhoide," 'Gaz. Hebd.,' 1869, 168. Eade, "The Etiology of Phthisis," 'Brit. Med. Journ.,' 1869, 233. Burdon-Sanderson, "Phthisis ab Hæmoptysi," 'Lancet,' 1869, i, 523. Villemin, "De la Propagation de la Phthisie," 'Gaz. Hebd.,' 1869, 260. Boisseau, "Historique de la Contagion de la Phthisie Pulmonaire." 'Réc. de Mém. de Méd. Mil.,' xxii, 353. Bernhardt, "Uebertragbarkeit der Tuberculose," 'Centralbl.,' 1870, 273. Sanger, "The Arsenical Treatment of Phthisis," 'Lancet,' 1869, i, 776. Bennett, "Cases of Phthisis treated by Rest and Diet only," 'Med. Times and Gaz.,' 1869, i, 65. Kinkhead, "Probable Evidence as to the value of Pancreatic Emulsion of Fat in Tubercular Consumption," 'Dub. Journ.,' xlviii, 539. Id., "Further Experience in the Treatment of Phthisis Pulmonalis, &c., by Pancreatic Emulsion," 'Med. Press and Cir.,' 1869, i, 134. Pidoux, "Thérapeutique comparée de la Phthisie," 'L'Union Méd.,' vii, 690. Duckworth, "On the Treatment of Hæmoptysis," 'Practitioner,' v, 78. Powell, "Notes on the Treatment of the Diarrhœa of Phthisis," ib., 145. Williams, "Notes on Alpine Summer Quarters for Invalids," 'Brit. Med. Journ.,' 1869, ii, 577. Weber, "The High Alpine Valleys as Winter Health-Resorts for the Consumptive," ib., 1870, i, 43. Sprengler, 'Der Landschaft Davos, als Kurort gegen Lungenschwindsucht,' Basel, 1869. Drysdale, "On Alpine Heights and Change of Climate in Consumption," 'Trans. of St. Andrew's Med. Grad. Assoc.,' 1869.

Carcinoma.

Beale ('Med. Times and Gaz.,' 1869, ii, 382) gives a case of carcinoma of the left lung in a man æt. 41, who for ten months before had complained of pain in the left chest, dry cough, night sweats, and wasting. During his stay in hospital the temperature was normal; there was absolute dulness over the left chest, with absence of vocal fremitus, and great enlargement of the superficial veins on that side.

Salter ('Lancet,' 1869, ii, 1) publishes a clinical lecture on a case of the same kind in a man æt. 43, in whom the right lung was found, with the exception of a small portion of the base, to be converted into a mass of cancer.

Beveridge ('Med. Press and Circ.,' 1869, i, 452) records a case of sudden death from hæmorrhage into the trachea, &c., in a man æt. 64, from cancerous deposits in the lungs, one of which had ulcerated through into a bronchus.

Moxon ('Path. Soc. Trans.,' xx, 28) records a case of cancer of the lower lobes of both lungs in a man, æt. 48, who had epithelial cancer of the anterior wall of the œsophagus passing through into the trachea. He holds that this was a case of extension of cancer from the progress of its germs down the bronchial tubes.

Bennett, "Lectures on the Natural History and Diagnosis of Intrathoracic Cancer," 'Brit. Med. Journ.,' 1870, i, 541. Jackson, "Osteoid Cancer of the Lung succeeding a similar Tumour of the Humerus," 'Path. Soc. Trans.,' xx, 25.

Other papers on diseases of the respiratory system, some omitted in their proper place, are—

Habershon, "Case of Pulmonary Apoplexy, causing Gangrene of the Lung and Pneumothorax," 'Lancet,' 1869, i, 527. Waters, "Clinical Lecture on Gangrene of the Lung," 'Brit. Med. Journ.,' 1869, ii, 459. Mandl, "Gangrène du Poumon," 'L'Union Méd.,' vii, 167. Paquet, "Du Traitement de la Gangrène pulmonaire, curable par les inhalations d'Acide Thymique," 'Bull. Gén. de Thérap.,' t. 77, p. 103. Roth, "Das Ambrée'sche Geheimmittel gegen Asthma Nervosum," 'Deut. Arch.,' vii, 453. Letzerich, "Zur Kenntniss des Keuchhustens" (a description of some experiments in which he transferred the sputum of hooping-cough, which he affirms always contains fungus, to the trachea of rabbits, and thus produced a true attack of pertussis by contagion), 'Virch. Arch.,' xlix, 530. Ferber, "Acute Geistsstörungen im Verlauf des Keuchhustens," 'Jahrb. f. Kinderh.,' iii (1870), 229. Rota, "I solfiti nella tosse ferina," 'Gaz. Med. Lomb.,' 1869, 181. Breidenbach, "Ueber die Anwendung des Chinin hydrochlorat. bei Tussis Convulsiva," 'Centralbl.,' 1870, 531. Rigden, "Hydrate of Chloral in Hooping-cough," 'Practitioner," v, 151. Waterhouse, "Some Notes of Hooping-cough and the effect of Chloral Hydrate in the treatment of the Second Stage," ib., 344. Bayer, "Zur Theorie der Entwickelung des Vesiculären Lungenemphysems," 'Arch. d. Heilk.,' xi, 360. Sikorsky, "Lymphgefasse der Lungen," 'Centralbl.,' 1870, 817.

D. *Diseases of the Circulatory System.*

Origin of Cardiac Murmurs, &c.

Perls ('Deut. Arch.,' v, 381) gives a series of measurements with especial reference to the size of the aortic and pulmonary artery orifices, and the changes in them at different ages. Following Norman Chevers in the view that the aortic orifice is not to be looked upon as a simple opening, but a cylindrical canal, bounded below by the fibrous ring, within which the convexities of the semilunar valves are attached (ostium cardiacum), and above by the insertion of their edges (ostium arteriosum), he concludes from his measurements that the ostium cardiacum is wider than the ostium arteriosum in children under sixteen. In subjects under forty, also, the ostium cardiacum is almost without exception wider than the ostium arteriosum, while above that age the opposite condition is almost constant. The same relation in the width of the

two openings exists in early age in the pulmonary artery, while later the balance between the two becomes more equal, without the complete inversion in their respective sizes. In all ages the two auriculo-ventricular orifices show a tolerably uniform excess of 10—11 mm. on the right side in comparison with the left, while the difference between the aortic and pulmonary orifices is completely balanced in advanced age. The numbers given for the auriculo-ventricular orifices agree pretty well with those of earlier observers. The increase in their width from age is only very small. The ratio found in the arterial orifices depends evidently on senile dilatations of the larger arteries; that it does not occur in consequence of increased resistance in the arterial system is proved by its absence in cases of chronic lung affection or of contracted kidneys, in individuals under forty. Probably this dilatation originates in the diminished elasticity of the vessel-walls in advanced age. He discusses the influence exerted by senile changes in the arterial openings on the relative proportions of the valves and the orifice, and he has made a series of measurements of the space covered by the valves, when unfolded to their greatest extent, and a comparison of the numbers so obtained with the measured width of the aortic orifice. These measurements give in youth and middle age a constant excess of the space thus covered over the width of the aortic opening, while in later years the reverse more frequently holds. From this it follows that, at least in the aorta, senile changes cause a disposition to relative insufficiency; but that this is a very rare consequence is shown by the author's own experiments, in which in senile hearts, where the deficiency in the superficies of the valves reached its highest, no insufficiency of the valves was found on pouring in water. Measurements of the ratios borne by the superficies of the auriculo-ventricular valves to the same orifices, in the healthy state and in insufficiency, present nothing new.

Davies ('Proc. Royal Soc.,' xviii, 265), taking the measurements of Peacock, Reid, and Bizot, finds that in different animals as well as in man the same relations exist between the area of the tricuspid and that of the mitral as between those of the pulmonic and aortic orifices; so that if the area of any three be known, that of the fourth may be correctly calculated; and as the ratio of the areas in any two corresponding orifices is almost constant, by measuring two openings in a healthy heart on one side, the size of the other two may be deduced, or, one healthy orifice being known, the area of the corresponding orifice can be approximately determined. He illustrates these assertions from the action of various diseases upon the heart, and traces out the reasons for the difference in magnitude of the four areas, upholding the view that the time of ventricular contraction is much shorter than is generally believed. He imagines, a view which has hitherto escaped the notice of physiologists, that at the end of the diastole the whole of the contents of the ventricle is momentarily at rest, and ready to take up a new movement in a course nearly at right angles to its line of entrance from the auricle.

Trotter ('Journ. of Anat. and Phys.,' iv, 295) holds that Davies has failed to establish the law he has enunciated, and concludes that the

aortic orifice is smaller than the pulmonic, because the arteries of the former system are longer than those of the latter.

Bayer ('Arch. d. Heilk.,' x, 1) refers the origin of the first sound of the heart mainly to the contraction of the ventricular muscle. He relies for his chief argument on the frequent coincidence of altered, diffused, or roughened first sound, with microscopic as well as naked-eye changes in the muscle in cases in which the valves are normal, whereas in slight affections of the valves, with normal muscular tissue, the first sound was always clear. After insisting that this view of its origin agrees with the phenomena of auscultation in health and disease, he suggests the possibility that accidental murmurs may arise from contraction of the muscle. As to the possible share of the auriculo-ventricular valves in originating the first sound, he would wish to see it confirmed by further observations. In another paper he gives (ib., 270) a detailed history of a case of complicated valvular disease, which certainly seems to support the view as to the origin of the first sound in muscular contraction.

On the other hand, Guttmann ('Virch. Arch.,' xlvi, 223) considers that the origin of the first sound is to be sought in valve-tension. In repeating the experiments of Ludwig and Dogiel, by auscultating the heart of a dog, from which the blood was completely excluded, he found that the first sound was persistent, though weaker and altered in character. He holds that even in a heart thus emptied of blood the contraction of the papillary muscles is still able to cause a certain amount of valve-tension, and concludes therefore, in opposition to these two observers, that the first sound is essentially due to tension of the auriculo-ventricular valves, and only partly to the muscular contraction of the heart. As a convincing argument against Bayer's conclusions, and in support of his own views, he puts forward the fact, stated by Traube, that in advanced cases of aortic insufficiency the first sound is completely inaudible at the apex. This may be easily explained on the supposition that it is a valve sound. It depends, as Traube shows, on the difference in tension of the mitral valve at the commencement and end of the ventricular systole. The smaller the difference between the tension at those two periods the less marked will be the vibrations, and the first sound therefore weak; if the difference in tension be reduced still lower, no sound will be heard. He concludes with the remark that his experiment proves in addition that the second sound heard over the ventricles originates in the arteries, and is only conducted over the former, disappearing altogether if, by tightening the ligatures, blood is prevented from entering the heart. The same author (ib., xlvi, 105) draws attention to the views of Geigel ('Würzburger Verhandl.,' 1868, i. s. 49), who explains the reduplicated second sound, which he observed in six cases running, to depend upon non-synchronous closure of the right and left ventricles, the pulmonary valve closing after the aortic from emptiness of the left and fulness of the right ventricle, and the first part of the sound being thus due to the aortic, and the second to the pulmonary valves. Guttmann states that in about forty cases he heard it in less than a fourth. When the heart beats violently, it is lost in a murmur. He does not look

upon it as pathognomonic, as it is frequently present in health and in other conditions, and holds that if Geigel's view is right it should be found in cases of mitral insufficiency. He thinks that the divided sound is set up at the mitral valve by the edges of the latter, and the blood passing in from the auricle. If there were a real double second sound, Skoda's explanation would hold good; one would be the mitral obstructive murmur, the other that of the pulmonary and aortic valves. Moreover, in opposition to Geigel, Guttmann finds the second sound most marked at the apex.

Sanders ('Edin. Med. Journ.,' xiv, 584) remarks on the variability in intensity, quality and audibility, of organic cardiac murmurs. He has found the presystolic bruit of mitral contraction to vary most, and sometimes completely to disappear.

Bartels ('Deut. Arch.,' vi, 111) inquires into the cause of a systolic murmur heard in one portion or other, or over the whole, of a lung, in several cases which he gives. In his first case, though the post-mortem examination does not seem to have been performed with sufficient accuracy to prove it, he considers that the murmur, heard over the whole upper lobe of the left lung, was due to stricture of both primary branches of the pulmonary artery and their first offsets, in consequence of chronic interstitial pneumonia, as in a case recorded by Immermann ('Deut. Arch.,' v, 235). In another case the murmur, heard on the right of the sternum from above the third rib to the clavicle, was evidently caused by the pressure of pleuritic effusion, its intensity diminishing and increasing with the emptying and refilling of an empyema. The other five patients in whom the murmurs occurred were affected with chronic pneumonia (partial condensation of lung-tissue), but the murmur had its seat, not in thickened, but in still normal portions of lung; in four of the five not in the lung which was really diseased, but in a lung which at the time of the examination was completely normal in all other particulars except the presence of this murmur. After briefly reviewing the bibliography of the question he analyses Frerich's three groups of murmurs, which, though synchronous with the heart's rhythm, do not originate in that organ; the first group caused by pressure of the stethoscope—compression murmur of the pulmonary artery in the second left intercostal space—in children, and in adults with very thin and elastic chest-walls; to this group belong also the systolic murmurs very commonly observed in the same artery as it courses through the left upper lobe, from pressure of thickened lung-tissue* on its primary trunk. With this group Bartels compares his case of empyema. That his other cases cannot be included under this, or under either of the other two groups—subclavian murmur, or systolic lung murmur in the portion of lung overlying the heart, caused by currents of air in connection with the movement of the latter—he concludes for reasons which he gives at length. In all the cases the murmur had the unmistakable character of a vascular, particularly an arterial one, exactly like the uterine murmur, or that

* The late Dr. G. H. Barlow used to teach that a very common and very early premonitory sign of phthisis was a soft systolic murmur heard under the clavicles (cf. his 'Manual of the Practice of Medicine,' 2nd ed., p. 294).—A. B. S.

of enlarged thyroid. Assuming that, as generally received, the murmur in the latter body is due to a dilatation of the arterial branches, this dilatation being greater in proportion to that of the larger trunks, their walls being thinner than other arteries of the same calibre, and the murmur becoming louder with the increase of blood acceleration at the time of the systole, he argues, in the absence of any pathological proofs as yet obtained, that a like general dilatation (and enlargement?) takes place, in his cases, in the branches of the pulmonary artery; and against the objection that dilatation of this vessel and its branches does occur without causing any murmur, in cases of obstructive heart diseases, he urges the experiments of Theodore Weber on the origin of murmurs in blood-vessels, which he considers his own cases and theory to support, inasmuch as in cases of obstructive heart disease there is a constant relation between the dilatation of the pulmonary artery and that of its branches; the walls of the vessels are always thickened, and the stream of blood passes through them much more slowly than normally.

Da Costa ('Amer. Journ. of Med. Sciences,' lviii, 17) discusses the question whether there are cardiac murmurs occurring in persons not anæmic, and therefore simulating organic valvular murmurs, their origin and their differential diagnosis, referring almost exclusively to the blowing systolic murmurs heard in the left auriculo-ventricular orifice. After giving several cases, he proceeds to analyse the murmurs, describing them as differing from those of mitral regurgitation in the absence of the intensified second sound in the pulmonary artery: in the fact that they are not heard at the back: in their localisation, being heard generally, not at the apex, but above it, over the body of the left ventricle, most marked in the third intercostal space. They are always systolic, devoid of harshness, not very loud, and of low pitch. They may be increased by pressure of the stethoscope, or modified by the movements of expiration and inspiration. They occur generally in persons affected with palpitation and more or less dyspnœa, with frequent, and in many cases irregular, heart-action. They are met with in disordered innervation of the heart from various causes, and are frequently combined with those respiratory affections in which there is decided pulmonic obstruction. They are most probably generated at the left auriculo-ventricular orifice, in one of two possible modes, either from interference with the closure of the valves, permitting temporary regurgitation, or from altered tension of the valves. These really functional murmurs may also occur with organic change in the heart, especially with hypertrophy of that organ, and in these cases the real diagnosis is, at any rate at first, difficult. The author believes, in conclusion, that cases of functional valvular disorder may pass into organic disease.

Cotton ('Brit. Med. Journ.,' 1869, ii, 4) gives the case of a man, æt. 35, suffering with severe dyspnœa and general depression, in whom it was impossible to count the pulse, the stethoscope, however, revealing 200 beats of the heart in a minute, each pulsation regular and uniform, consisting of but one sound, and that free from murmur. After treatment with stimulants, ammonia, potassa and digitalis, the heart

returned suddenly to its normal action, and the patient to his ordinary condition.

Niemeyer, P., "Entwurf einer einheitlichen Theorie der Herz-Gefäss- und Lungengeräusche," 'Deut. Arch.,' vii, 136; Thamm, "Beiträge zur Lehre über Venenpuls und Gefässgeräusche," 'Berl. klin. Woch.,' 1869, 129; Niemeyer, P., "Die Herzgeräusche, ihre Geschichte und ihre Theorie," 'Deut. Klin.,' 1869, 433; Powell, "Notes on Displacements of the Heart," 'Brit. Med. Journ.,' 1869, ii, 54; Salter, "On Presystolic Murmur," 'Lancet,' 1869, ii, 565; Fothergill, "The Diagnostic Value of Accentuation of the Second Sound of the Heart," ib., 633; id., "Digitalis in Disease of the Heart," 'Edinb. Med. Journ.,' xiv, 876; Dobell, "On Pain at the Heart and its Neighbourhood," 'Med. Press and Circ.,' 1869, ii, 115; Smith, "Heart Disease, in which the Symptoms during Life were referred to the Stomach," ib., i, 5; Wilks, "Disturbance of the Heart in Renal Disease," 'Brit. Med. Journ.,' 1870, i, 326; Buchanan, A., "On the Force of the Human Heart," 'Lancet,' 1870, ii, 665; Haviland, "Sea-air and Heart Disease," 'Brit. Med. Journ.,' 1869, ii, 70.

Embolism, Thrombosis, &c.

Feltz ('Traité Clinique et Experimental des Embolies capillaires,' 2nd ed., Baillière, 1870) gives numerous experiments in which he produced capillary embolia in rabbits, guinea-pigs, dogs, and frogs, by injecting charcoal powder or pulverized fibrine into their veins; death occurred sometimes immediately, always within five minutes. The lungs were found gorged with blood, and the microscope showed the presence of the foreign particles in their tissue. Death was caused by plugging of the capillaries and arrested supply of blood. Twenty-seven cases of different diseases in which these embolia were found in various organs are given, and he calls attention to the part they play in the effects of frost-bite, burns, and complicated fractures. Such capillary embolia were found in the case of a patient (p. 41) suffering from phlegmasia dolens, who died suddenly from suffocation. If they do not cause death, the embolia of the pulmonary artery lead to the formation of pulmonary infarctus, and these again give rise to abscesses. The infarctus always orginate in hæmorrhage resulting from rupture of the capillaries. On account of the anatomical disposition of the bronchial arteries in cases of capillary embolia in the aortic system, pulmonary symptoms are rarer, and cerebral ones more frequent, than when the embolia occur in the lesser circulation. They can be demonstrated in the smallest arterioles and capillaries of all the organs, and even in the synovial vessels. Feltz gives also his conclusions as to the relations existing between infarctus, abscesses, and capillary embolia in the liver and other organs; reviews briefly the different theories of Virchow, Richardson, &c., on the subject of coagulation, and considers that the so-called tubercles produced by inoculation are really capillary embolia. Very good plates of the naked-eye and microscopic appearances found in the experiments and cases related in the text are appended.

Ponfick ('Virch. Arch.,' l, 623) publishes a remarkable case of most extensive embolism from mitral endocarditis. There were hæmorrhagic spots in the dura mater and brain, throughout the whole of the alimentary canal, with hæmorrhagic erosion in the stomach, in the endo- and

peri-cardium, pleura, and lungs, in the kidneys and bladder, and in several muscles of the trunk. There were also fibrinous patches, the results of emboli, found in the spleen, kidneys and liver. The last-mentioned organ was large, with tense capsule, the embolic deposits in it firm, yellowish, with an injected halo, and fibrinous in character. No clot could be found in the hepatic artery or its branches. With this case he unites two others of embolism from endocarditis, in both of which a clot was found obstructing the superior mesenteric artery.

Meiggs ('Amer. Journ. of Med. Sciences,' lvii, 24) gives the history of a case of embolism occurring in a boy æt. 10, and following scarlet fever, in which the subclavian or axillary artery on the left side and both tibials were plugged, the patient recovering; and a second case in a man fifty-two, of embolism of the right anterior tibial and right brachial, in connection with thickened and ossified aortic valves, dilatation of the ascending and constriction of the descending thoracic aorta.

Church ('St. Barth. Hosp. Rep.,' vi, 99) is convinced from further research that disease of the arterial wall is rarely, if ever, a cause of intracranial aneurisms in the young; that hypertrophy of the left side of the heart has little share in their production; that they are nearly always due to embolism, and are most common in the middle cerebral arteries and their branches, the vessels which are most frequently the seat of plugging from embolic masses. He thinks it probable that aneurismal dilatations take place when the blood-stream through the artery is obstructed, but not completely stopped; the dilatation consequent on the partial obstruction causing interference in the nutrition of the wall of the artery and the contiguous parts, the former yielding where it is least supported. He gives in full four cases of the kind occurring in three males æt. 13, 15 and 20, in the right middle cerebral, and in a female æt. 17, in the left anterior cerebral, artery.

Joffroy ('Gaz. Méd. de Paris,' 1869, 446) gives a case, in a female æt. 34, of embolism of the right artery of the Sylvian fissure with considerable narrowing of the mitral orifice; the clot became organized and contracted, so that one part of the artery was again able to transmit blood. Death occurred four months after the apoplectic attack.

Liouville (ib., 519) records a case of sudden death in a female æt. 78, in whom there had been incomplete left hemiplegia; the autopsy showed ischæmia of nearly the whole right cerebral lobe, an embolism entirely obstructing the termination of the right internal carotid and its two branches; the clot hard, well formed, rounded, smooth, not adherent.

Orr ('Glasg. Med. Journ.,' 1869, i, 145), in reference to a case of advanced change in the aortic valves with embolism of the left artery of the Sylvian fissure in a boy of thirteen, makes some remarks on emboli and cardiac coagula, which contain nothing fresh.

Ogston ('Med.-Chir. Rev.,' xliv, 452) on "sudden death," describes thrombosis of the heart and great vessels as present in 10 per cent. of the whole number tabulated, noting its rarity in the aorta and pulmonary arteries, and in the inferior vena cava.

McKendrick ('Edinb. Med. Journ.,' xv, 396) publishes a case of cardiac thrombosis in a girl of nineteen, in which the clot caused death by closure of the mitral orifice.

Bristowe ('Path. Soc. Trans.,' xix, 90) gives the case of a widow who suffered from chronic renal disease, accelerated by catching cold, and sank gradually. The autopsy showed cystic kidneys with shrunken cortex; the heart contained large adherent clots. At the apex of the left ventricle were several rounded, smooth coagula, softened within to a creamy pulp, enclosing, in places, numerous hæmatoid crystals, and attached to the parietes by means of processes prolonged beneath the columnæ carneæ. He looks upon the case as an example of the formation of clots some considerable time anterior to death.

Gaskoin ('Med. Times and Gaz.,' 1869, ii, 276) records a case of "polypus" of the left side of the heart, causing sudden death in a lad of seventeen. After death a yellow ribbon-like clot was found implanted in the columnæ carneæ, enveloping the tendinous cords of the mitral, and prolonged into the aortic orifice. In its middle there existed a bulging which contained about a drachm of disorganized blood. He considers it possible that the aorta might have been occluded, and death thus brought about.

Bucquoy ('Gaz. Hebdom.,' 1869, 155) showed to the Société Médicale des Hôpitaux a preparation in which an old thrombus (concrétion polypiforme) was adherent to the top of the cavity of the left ventricle, without any other lesion of the endocardium; connected with the old clot was one of more recent origin, about the size of a hen's egg, non-adherent, and exactly filling the cavity. This was taken from a woman æt. 26, who had presented symptoms of mitral insufficiency (hypertrophied and dilated heart, systolic bruit at base propagated into axilla). He remarks that it was doubly interesting, first, as an example of a thrombus formed a long time before death; and, again, because in spite of the physical symptoms, it was the only lesion found.

Moxon ('Brit. Med. Journ.,' 1870, ii, 473) showed to the Pathological Society a portion of lung and the vena cava inferior from a woman who died of pyæmia. The artery supplying a patch of lung, which was in a state of incipient gangrene, contained a yellowish clot, lodged at a bifurcation, adherent to the wall at one point, and extending a little way into each limb of the fork. The main pulmonary artery and its branches were occupied by the prolongation of the post-mortem clot in the right ventricle. The vena cava inferior had also a yellowish clot, extending throughout its whole length, and into the iliac veins. It was adherent to the left side of the vena cava, was rounded, leaving space for blood to pass, and had a rounded end protruding into the right auricle. It appeared oldest in the left iliac vein, which was in contact with an abscess lodged between the rectum, broad ligament and pelvic wall.

Eisenchitz ('Jahrb. f. Kinderheilk.,' ii, 83) publishes a case of aphasia in a boy, æt. 11, in consequence of embolism of the artery of the Sylvian fossa; Fagge ('Brit. Med. Journ.,' 1870, ii, 473), a case of embolism of the cerebral artery in a woman, æt. 26, from disease of the mitral valve; Groos ('Berl. klin. Woch.,' 1870, 396) describes the case of a man, æt. 45, of thrombosis in the veins of both thighs, followed by phlebitis, with accompanying circumscribed pleuro-pneumonia and embolism of several branches of the pulmonary artery; Aufrecht (ib., 1869, 308) gives a case of inflammation of the vermiform process with perityphlitis, phlebitis, and thrombosis of the vena mesenterica

superior; Barck, "Embolia et Thrombosis Arteriæ Iliacæ Extern.," 'Deut. Arch.,' v, 532; Hilliard, "Fatal Embolism of the Pulmonary Artery, and Thrombosis of the Saphena and Femoral Veins, from a patient who died suddenly of Typhoid Fever," 'Path.Soc. Trans.,' xix, 107; Gay, "Three specimens of Blood-clots within the Veins in process of organic union with the Vein-walls," ib., 166; Cannet, "Note sur un Cas d'Embolies," 'Gaz. des Hôp.,' 1869, 294; Fleury, "Phlébite Rhumatismale," ib., 33; Ferrand, "Emphysème, Phlébite Crurale, Embolie cardiaque, guérison," 'Union Méd.,' viii, 762; Meade, "Cases of the Occlusion of Arteries by Emboli," 'Brit. Med. Journ.,' 1870, ii, 4; Moxon, "Thrombosis of the Renal Veins," ib., i, 167; Payne, "Coagulation in the Portal System of Veins," ib., i, 347; Kelly, "Thrombosis of the middle Cerebral Artery, white softening of the Brain," 'Lancet,' 1870, i, 409; Heubner, "Nachtrag zu meiner Abhandlung über Sinusthrombose im 'Arch. der Heilkunde,'" same 'Archiv,' x, 224; Stokes, "Phlebitis of the Cerebral Sinuses, Disease of the Tympanum," 'Dubl. Journ.,' l, 212; Smith, "Thrombosis affecting the Veins of the right side of the Neck and right Upper Extremity," ib., 223; Hallopeau, "Sur deux faits d'Oblitération Artérielle, disparition rapide des Accidents," 'Gaz. de Paris,' 1870, 295.

Pericarditis.

Gueneau de Mussy ('Gaz. Hebd.,' 1869, 804) calls attention to a sign, little recognised, which throws light on the diagnosis in obscure cases of pericarditis—the pain caused by pressure on the epigastrium, or over the precordial region. It is most common in the costo-xiphoid angle on both sides, or on one, the right quite as often as the left; at the same time and on the same side pain may be found on pressure between the two inferior attachments of the sterno-mastoid over the course of the phrenic nerve, just as in diaphragmatic pleurisy. His explanation is that the two branches of the phrenic nerve entwined in the fibrous tissue of the pericardium become the subjects of irritation, which proceeds upwards along their trunks, and outwards to their terminations over the costo-xiphoid angle. This abnormal sensibility does not occur except on pressure. In several cases he has found it when the other signs were still obscure, and did not permit complete diagnosis. He considers it more constant than the precordial pain generally alluded to by authors.

Schweder ('Berl. Klin. Woch.,' 1869, 563) gives the case of a recruit, æt. 22, who had been in hospital nine days for gonorrhœa, and had been discharged. Next day, without having experienced any chill, he was attacked with severe palpitation and pain in the region of the heart. On readmission there was heard, as the patient lay on his left side, a very loud, clicking murmur, synchronous with the impulse, lasting for 5—7 minutes, then becoming irregular and weaker, and finally inaudible. This murmur was so intense that it could be heard over the whole room, and even outside it. A deep inspiration caused its cessation. As the patient lay on his back the heart sounds were weak and clear, with a loud rasping friction sound besides. He considers that the murmur was caused by an inflammation of the part of the pleura overlying the pericardium, in addition to a simple pericarditis, which by itself would be insufficient to explain it; and that, when the patient lay on his left side, the two inflamed surfaces were pressed together by the heart, and then rubbed against one another by the impulse of the latter. The patient was treated with blisters and got rapidly well, though immediately after the disappearance of the pericardial symptoms a chronic gleet set in.

Dieulafoy ('Union Méd.,' viii, 133) describes a murmur which Jaccoud, under whose care the patient, a man, æt. 35, was, put down to pericarditis. It was musical, extremely limited, heard in the fourth left intercostal space at the left margin of the sternum; its pitch (timbre) was high, increasing with the systole; it was audible with both sounds, without blowing or friction sound. It entirely disappeared when the patient sat up; if he reclined a little backwards on two or three pillows it recommenced, and became most intense when the recumbent position was complete. He considers that it was due to a false membrane on one layer of the pericardium, set in vibration by friction against the layer opposed to it. A month later the bruit remained unchanged.

Thompson ('St. Geo. Hosp. Rep.,' 1869, 31) found that 43 patients out of 266 suffering from acute rheumatism were attacked with pericarditis, *i. e.* 16 per cent. In 34 cases of rheumatic pericarditis the mitral valve alone was affected; the aortic alone in 10; and both valves in 48. In 3 only were the tricuspid valves attacked. The average duration of the stethoscopic signs of the affection was 15 days.

Hambursin ('Presse Méd. Belge,' 1869, 13) gives 4 cases of pericarditis and organic heart disease, preceded, and, as he thinks, caused by perihepatitis, acute or chronic. The autopsies of two, a boy of 18, and a woman of 28, are given. In both the liver was covered with false membranes, was adherent to the diaphragm, and presented the appearances due to cirrhosis, viz. different-sized yellowish granulations separated from one another by increased connective-tissue. The pericardium covering the right heart, in relation with the diaphragm, was strongly adherent to both; the right heart was immensely dilated and hypertrophied; the tricuspid valve shared in the general dilatation and was insufficient. In the second case the right pleura was also adherent both to the diaphragm and to the base of the right lung. The third case is that of a woman, æt. 52, in whom a pericarditis or endocarditis followed acute subhepatic peritonitis, the patient more or less recovering. The most noticeable fact, as bearing on the paper, is that at each systole of the heart, the skin over the epigastric region was retracted towards the diaphragm, the depression disappearing with the diastole. This was probably due to adhesions uniting the heart and diaphragm. In the fourth case, a man, æt. 52, who had suffered from several attacks of hepatitis, the following were made out during life; hypertrophy of the liver and heart, with epigastric pulsation as in the last case; and a blowing systolic bruit most intense at the apex.

Crocq also (ib., 25, 3) showed a heart with subacute pericarditis, developed in consequence of a chronic perihepatitis and inflammation of the spleen.

Roger ('Union Méd.,' viii, 133) publishes a case in which he performed paracentesis pericardii on a girl, æt. 12 years. As the apex beat was in the fifth intercostal space, just below the nipple, where the operation would usually be performed, a hydrocele trocar, the canula of which was guarded by a piece of gold-beaters' skin, as for thoracentesis, was plunged, without preliminary incision, into the sixth intercostal space, its point directed from left to right, and a little upwards. The thickened

pericardium was not pierced at first, but on a second attempt 780 grammes of fluid escaped. The patient was much relieved, but was suddenly attacked next day with a fit of suffocation, and died three hours afterwards. The autopsy showed a small quantity (about 100 grammes) of fluid in the pericardium, false membranes on the latter, with tubercular granulations, and some fibro-cellular adhesions uniting the two layers near the heart's apex. He considers that the ultimate cause of death was to be found in the formation of large clots, especially in the right heart; one (an embolus?) obliterated the pulmonary artery going to the right lung.

Löbel (quoted in 'Centralbl.,' 1870, 43) used a glass syringe which could contain an ounce of fluid, and armed with the needle of a subcutaneous injection-syringe, to draw off the pericardial fluid in a woman æt. 68, in whose case all internal remedies had failed, and death was imminent from suffocation. The canula was plunged into the third left intercostal space, an inch from the margin of the sternum. On withdrawing the piston the syringe was filled with a clear yellowish fluid. In this way about three ounces of serous fluid were removed. The heart dulness was diminished, and the patient felt relieved, and for the first time for a long period was able to sleep. But the improvement did not last long; double hydrothorax supervened; twelve days after the first operation it was again repeated, this time in the third right intercostal space, the point of the needle being directed to the left, and three more ounces were taken away. Next day the patient died. The autopsy bore out the diagnosis; there was no blood in the pericardium, or lesion of the heart; the perforations of the needle were distinct; there were several tubercles in the pericardial false membranes.

Wilks, "Adherent Pericardium as a cause of Cardiac Disease," 'Guy's Hosp. Rep.,' 1870, 196; Guy's Hospital, "Autopsy and case of attempted Suicide during Delirium of Acute Pericarditis," 'Brit. Med. Journ.,' 1870, i, 9; Ralfe, "Extensive Effusion into the Pericardium, caused by a fibrinous clot occluding the orifice of the coronary veins," ib., ii, 553; Heaton, "Fatal Case of Hydropericardium," ib., ii, 8; Allbutt, "Remarks on Paracentesis Pericardii," ib., ii, 31; Id., "Clinical Lecture on Paracentesis Pericardii," 'Lancet,' 1869, i, 807; "Pericarditis: Puncture of Pericardium," 'Gaz. des Hôp.,' 1870, 281; Jacobs, "Péricardite et Endopéricardite chez les Viellards," 'Presse Méd. Belge,' 1869, 309; Jennings, "Specimen of Pericarditis," 'Dubl. Journ.,' xlviii, 218; Eames, "Case of Pericarditis, with Autopsy," 'Med. Press and Circ.,' 1869, i, 116.

Diseases of myocardium; heart aneurism; hydatids.

Sanders ('Edinb. Med. Journ.,' xiv, 673) gives the case of a man, æt. 54, who had been attacked three years before with dyspnœa and pain in the chest, which had compelled him to give up work five weeks before his admission into hospital. His symptoms during life had been great venous congestion of the face and upper extremities, increased by exertion, dyspnœa and a feeling of exhaustion or syncope. He had some œdema of the legs and anasarca. The heart was enlarged transversely, its dulness measuring four and a half inches across to the left of the sternum, its impulse strong and diffused with indistinct apex beat. The pulse was small, weak, with occasional intermissions at long intervals. The comparative strength of the cardiac and weakness of the radial pulse was very striking. On auscultation both sounds were less marked

than usual, without murmur, or accentuation of the second sound. Over the aorta the first, and in the neck the second, sound was reduplicated. The internal jugular veins were distended, with double pulsation and thrill at times. Later the patient was attacked with erysipelas of the head and neck, and died rather suddenly from failure of the heart's action. The autopsy showed atheroma of the aorta and pulmonary artery; enlarged and dilated heart, with healthy valves; thickened walls of right ventricle, and hypertrophied columnæ carneæ, with a small fibrous spot in one of them; slight thickening of the endocardium. The left ventricle was the chief seat of the disease; posteriorly and at the base its muscular substance was healthy and of natural thickness, but at the apex and upwards over the anterior portion to within an inch of the base, its walls presented throughout the characteristic aspect of atrophy and degeneration. At the apex the thickness measured about two lines, and higher up three lines, almost entirely composed of tendinous and fibrous tissue, the latter most abundant next the endocardium, the adjoining septum being similarly degenerated. The pericardium was healthy. Towards the apex, the fibrous wall was bulged out, forming a rounded excavation in the ventricle, one and a half inches in diameter—the commencement from within of a circumscribed heart aneurism. The musculi papillares were atrophied. There were embolic cicatrices in the spleen and kidneys. The other organs were healthy. The paper concludes with a comparison of the post-mortem appearances with the symptoms presented during life.

Crocq ('Presse Méd. Belge,' 1869, 24) showed to the Anat. Path. Society of Brussels a heart with hypertrophy, especially of the right ventricle, without valvular mischief, resulting from emphysema.

Payne ('Brit. Med. Journ.,' 1870, i, 130) records two cases of sudden death from affection of the heart in two men, æt. 75 and 67. There was well-marked fatty change in the first, slight in the second. In both the arteries at the base of the brain were atheromatous.

Whipham (ib., 652) brought before the Pathological Society a heart from a man æt. 29, in the walls and columnæ carneæ of which were fibrous growths apparently of some standing, similar—in the absence of any history of syphilis—to the so-called syphilitic deposits.

Moxon (ib., 167) showed to the same society a specimen of primary hydatid of the heart, situated posteriorly, at the junction of the auricular with the ventricular septum, and by its pressure occluding the coronary sinus.

Kelly ('Path. Soc. Trans.,' xx, 145) records the case of a boy æt. 10, who died suddenly from rupture of an hydatid cyst into the right auricle, one large sac the size of a walnut had escaped from it, and was found after death to lie against the tricuspid valve, preventing the passage of blood, and of the smaller vesicles into the right ventricle. An oval hydatid cyst was also found in a main branch of each pulmonary artery.

Fowler, "Fibroid (probably syphilitic) Degeneration of the Heart," 'Path. Soc. Trans.,' xix, 108; Pick, "Fibroid Degeneration of the Heart (syphilitic?): aneurism in the right ventricle and in the septum ventriculorum," ib., 156; Arnott, "Aneurism of the left

Ventricle of the Heart, with partially ossified walls, winding round the root of the aorta," ib., 149; Murray, "Dissecting Aneurism of the wall of the right side of the Heart," ib., xx, 131; Walford, "Aneurism of the Heart," 'Brit. Med. Journ.,' 1869, ii, 6; Bennett, "Fatty Degeneration of the Heart (in a woman, æt. 24)," ib., 1870, i, 400; King, "Sudden Death from Degeneration of the Heart, chiefly of the columnæ carneæ of the left ventricle," ib., ii, 412; Gairdner, "Bronchitis, with slight Dropsy: albuminuria, hypertrophy of left ventricle of heart," ib., 649.

Endocarditis.

Johnson ('Brit. Med. Journ.,' 1870, i, 229) describes the morbid anatomy of acute endocarditis. He considers that the reason why the pathological changes are often limited to the left side of the heart is, that the morbid element of acute rheumatism, which is the most frequent cause of endocarditis, is contained more abundantly in arterial than in venous blood; and in support of this view he quotes Richardson's experiment, in which lactic acid was injected into a dog's peritoneum, with resulting endocarditis and fibrous deposit on the tricuspid valves—the acid thus absorbed coming, in this case, first in contact with the right side of the heart. He maintains that the immediate cause of the fibrinous deposit, which constitutes the vegetations of endocarditis, is the altered physical condition of the lining membrane, which results from its being inflamed. This explanation, essentially the same as that given by Rokitansky ('Path. Anat.,' iv, 222), he supports by the experiments and arguments of Simon, Mackenzie, and Lister.

Hyde Salter ('Lancet,' 1869, ii, 113, &c.) insists that too much stress in the localisation of heart murmurs is laid upon conduction alone, whereas it is really determined by conduction and convection; and that by the latter agency the seat of a cardiac murmur is often displaced to a considerable distance from the seat of its generation. He finds it impossible to say at present why a murmur may be thus transferred in one instance, and not in another. In illustration of his arguments he gives six cases. The first was that of a youth, æt. 19, who had had rheumatic fever five years before, and in whom was heard a murmur, double at the mitral orifice, presystolic at the apex, systolic in the axilla and round to the back—a murmur therefore of obstructive and regurgitant mitral disease. He does not remember to have met with a case before in which, as in this, a mitral regurgitant murmur appeared to be absolutely inaudible at the apex, and he thinks that the case, as described in full, proves that a valve so far imperfect as to allow regurgitation, and give rise to considerable regurgitant murmur, may yet close sufficiently sharply and completely to generate a natural first sound; and that sounds generated by blood friction, and by valve-tension, are not conducted by the same means or media—the latter being conducted by the ventricular wall to the apex, the former conveyed by the blood to the auricle. The second case was that of a man, æt. 31, who had had three attacks of rheumatic fever. Here there were two murmurs at the aortic orifice, a loud diastolic murmur carried by the regurgitating blood back into the ventricle, down to its very apex, and heard there; and a systolic murmur carried onwards into the

arteries and felt and heard in them. The third case, also in a man, was of the same kind as the last. The fourth case, in a man æt. 26, who had had rheumatic fever five times, was diagnosed as one of aortic regurgitation, with well-marked regurgitant pulse, and a murmur inaudible at the base, but audible at the apex. The same point was illustrated in the fifth case, that of a woman æt. 44, an obese patient weighted with an abdominal tumour, who was supposed to suffer from rupture of the aortic valves, caused by violent exertion and emotion, and in whom the same physical signs were present as in the fourth case. The sixth case is given as furnishing a curious violation of the laws of conduction and convection. It was that of a woman who was admitted with acute articular rheumatism, and in whom the murmur was heard at the part *from* which the blood was flowing (the aortic orifice), and the natural sound at that *to* which it was flowing (the ventricle). The case could not be further followed out, and is to some extent, therefore, unsatisfactory.

Moxon (ib., 608) holds that a more important question than the seat of a valvular obstruction in the heart is the nature of the disease which causes it, whether that disease be ulcerative, and hence spreading, or whether constrictive, and hence quiescent, though permanent. He thinks that if we were better able to separate the cases of the latter from those of the former disease, we should be better able to treat the two affections—the latter demanding means for mechanical relief, the former requiring the quality of the blood depraved by the ulcer products to be especially regarded. He gives a case of ulcerative endocarditis in a man, æt. 25, which suggests, as do other cases of the same kind, that an important means of diagnosis, hitherto unnoticed, may be found in the size of the spleen, which is generally small and hard in obstructive, and large and soft in ulcerative heart disease. In this case there had been, during life, a loud systolic bruit over the cardiac region, with the ordinary symptoms of heart disease. After death there was found ulceration of the aortic valves; acute aneurism of the heart and of the aorta from the friction of the vegetations on the valves; and a spleen weighing 24½oz. (Cf. 'Path. Soc. Trans.,' xix, 148.)

Aufrecht ('Berl. Klin. Woch.,' 1869, p. 317) gives the autopsy of an epileptic imbecile, a woman, æt. 28, who died suddenly, and who had suffered from aortic valvular disease for six years before her death. For the last year and a half no trace of the valve affection was present. The right ventricle was greatly enlarged. All the valves were normal except those of the aorta. Instead of the latter, were found two very large, thickened, but well-acting valves, one anterior and one posterior. At their right extremity, where they joined, was a hard rough nodule, the size of a pea. This he looks upon as the remains of the third valve, destroyed by a former inflammation. The two remaining valves became hypertrophied, and so were completely able to prevent insufficiency of the aortic orifice.

Peter, "De l'Endocardite," 'Gaz. des Hôp.,' 1869, 109; Durosiez, Two Cases of Narrowing of the Mitral, and three of Narrowing of Tricuspid, ib., 423; Bottentuit, "Anasarque Généralisée; insuffisance Mitrale et dégénérescence granulo-graisseuse du foie et des reins," ib., 61; Létiévant, "Endocardite Ulcéreuse, Gangrène de la jambe gauche,"

'Lyon Méd.,' iii, 45; Hallopeau, "Aortic and Mitral Disease," 'Gaz. Méd. de Paris,' 1869, 683; Moreau, Presystolic Murmur with Mitral Narrowing in a girl, æt. 18, 'Presse Méd. Belge.,' 1869, 408; Leclerc, Two cases: one of tricuspid, mitral, and aortic disease, in a man, æt. 27; the other of tricuspid and mitral, in a man, æt. 58, ib., 16; Wilks, "Note on the History of Valvular Diseases of the Heart," 'Guy's Hosp. Rep.,' 1870, 209; Fagge, "On the Murmurs attendant upon Mitral Contraction," ib., 247; Moore, "Mitral Valve Disease," 'Dubl. Journ.,' xlviii, 215; Hayden, "On Constriction of the Mitral Orifice," 'Med. Press and Circ.,' 1869, i, 249; Stokes, "Aortic Patency," &c., 'Brit. Med. Journ.,' 1869, i, 152; Salter, "Case of double Aortic Disease," ib., 1870, ii, 82; Whipham, "Diseased Tricuspid Valves," ib., 617; Sutton, "Valvular Disease of the Heart: venesection on three separate occasions" (in a man, æt. 48, with sphygmographic tracings taken before and after the bleeding), ib., i, 360; and cf. case recorded by same author (ib., 32) of a woman, æt. 20, whose symptoms were much relieved two months before death by venesection: the autopsy showed great contraction of the mitral orifice, and hypertrophy and dilatation of the whole heart; Salter, "On the Hæmorrhages of Heart disease," 'Lancet,' 1870, ii, 425; and cf. 'Path. Soc. Trans.,' Peacock, xix, 161, 163; Moxon, ib., 154, 168; Basham, ib., 152; Murchison, ib., 193, 195; Greenhow, ib., 176; Leared, ib., 94; Church, ib., 146, 147; Ogle, ib., 158; Sanderson, ib., 171; Myles, ib., xx, 139; Tuckwell, ib., 155.

Rupture of Heart, &c.

May ('Brit. Med. Journ.,' 1869, ii, 6) records a case of rupture of the heart, which he considers to have been one of aneurism of the left ventricle, associated with fibroid degeneration. A man, æt. 61, was seized one night with acute pain in the epigastrium, extending through to the back, and accompanied with coldness of the extremities. Two or three evenings before, he had complained of slight uneasiness in the chest, which he had attributed to indigestion. The heart's action was tumultuous, the sounds distinct, the pulse feeble and frequent. The pain ceased after a few hours, and did not return, but was followed by dyspnœa, with inability to lie on the right side; there was increased dulness over the cardiac region, and œdema of the legs; death occurred suddenly, seventeen days after the commencement of the illness. The autopsy showed the pericardium filled with soft clotted blood; the anterior wall of the left ventricle very thin, slightly adherent at its lower half to the pericardium; near the auriculo-ventricular septum were two small openings in the anterior wall, large enough to pass a No. 6 bougie. The heart was pale, and the aorta atheromatous.

Marcq ('Presse. Méd. Belge,' 1869, 93) publishes a case of sudden death from spontaneous rupture of the anterior wall of the left ventricle, which had undergone fatty degeneration, in a woman, æt. 78.

De Bary ('Deut. Arch.,' vii, 152) gives the following:—A woman, æt. 72, who had suffered from paroxysmal pains—due to gall-stones, as was proved by the autopsy—was suddenly seized, September 28, 1869, with pain in the left side, below the angle of the scapula, coldness of the face and extremities, cold sweat, and dyspnœa. The heart sounds were irregular, the pulse very weak; during the next three days she had sudden paroxysms of pain, with difficult breathing, violent eructations, and retching. The next day, October 2, she felt well, but complained of difficulty in swallowing fluids; her pulse was better, but still weak. On the evening of the 4th, while sitting up in bed and drinking water, she fell back suddenly and died. At the autopsy the pericardium was

found much dilated, containing about a pint of coagulated blood; in the middle of the posterior wall of the left ventricle was a transverse rupture, an inch long, with ragged edges, and the inner opening smaller than the outer; the muscle in its neighbourhood was fatty, and elsewhere almost normal; the valves were healthy, and there were atheromatous plates in the aorta. The patient lived six days after the rupture.

Clapton ('Brit. Med. Journ.,' 1870, i, 59, 'Path. Soc. Trans.,' xxi, 95) showed at the Pathological Society a rupture of the right ventricle, stretching parallel to the tricuspid valve, through the endocardium and most of the muscular tissue. The microscope revealed fatty degeneration of the left ventricle. The woman, æt. 61, had been in good health up to twelve months before death, was attacked by precordial distress and palpitation, with scarcely any trace of a bruit, and died apoplectic and comatose.

Wiltshire ('Brit. Med. Journ.,' 1870, i, 652, 'Path. Soc. Trans.,' xxi, 97) also showed a heart from an old woman found dead in bed, which was ruptured in two places, one through the entire wall, the other through the external fibres.

Hooper ('Trans. Path. Soc.,' xix, 186) records the case of a woman who died suddenly, and in whom there was found a very small perforation in the left ventricle.

Murchison (ibid., 100) gives the case of a man, æt. 45, who suffered from valvular disease, and died suddenly in hospital. The autopsy showed, in addition to disease of the aortic and mitral valves, rupture of one of the former, and a rupture, about two lines in length, in the right ventricle, situated on its anterior wall, near the septum, and running obliquely outwards.

Munro ('Edin. Med. Journ.,' xv, 67) publishes a case in which extensive damage—destruction of the mitral and tricuspid valves, with injury to the septum ventriculorum, left auricle, &c.—caused in a dog by a bullet, was not followed by immediate death; the animal running forty-two paces from the spot on which it was standing when shot.

Wright ('Brit. Med. Journ.,' 1869, i, 533) contributes a case of wound of the heart by a needle, in a boy, followed by death.

Angina Pectoris.

Lockhart Clarke ('St. Geo. Hosp. Rep.,' 1869, ii) gives a case of angina pectoris in a man æt. 47, with dilatation, hypertrophy and fatty degeneration of both sides of the heart, but without valvular disease or calcification of the coronary arteries. He gives a summary of the views entertained as to its pathology, and quotes Bezold ('Untersuchungen aus den Phys. Lab.' in Würzburg, 1867), and Eulenburg and Guttmann ("Die Pathologie des Sympathicus," 'Arch. f. Psychiatrie,' 1868-9), in favour of its dependence upon neurosis of the cardiac plexus. In Clarke's case decomposition was too far advanced to allow of examination of the ganglia.

Tacey ('Glasg. Med. Journ.,' N.S., i, 556) records the case of a man æt. 45, under Leishman, in whom severe attacks of dyspnœa and pain were much relieved by the inhalation of five minims of nitrite of amyl.

An hour and a half after the last inhalation the patient died. He was found to have advanced aortic and mitral disease.

Wilks, "Case of Aortic Disease, attended with Angina Pectoris, in which Nitrite of Amyl, Chloroform, and Subcutaneous Injections were each used with benefit," 'Lancet,' 1869, i, 85; Chatin, "Observations d'Angine de Poitrine," 'Lyon Méd.,' i, 238; Eulenburg, "Lectures on Cardiac Neuralgia (Angina Pectoris)," 'Med. Times and Gaz.,' 1870, i, 329, &c.; Brunton, "Case of Angina Pectoris," 'Clin. Soc. Trans.,' iii, 191; Anstie, "Case of Angina Pectoris relieved by Nitrite of Amyl," ib., 81.

Congenital Malformation of the Heart, &c.

During the last two years a great number of specimens of malformations of the heart and large vessels has been shown at the Pathological Society of London; among others, by Wagstaffe ('Path. Soc. Trans.,' xix, 96); Fox (ib., 104); Church (ib., 147, 188); Greenhow (ib., 159; xx, 98; xxi, 86); Kelly (ib., xix, 185; xxi, 89); Green (ib., xix, 188); Peacock (ib., xx, 87; xxi, 78, 89); Hickman (ib., xx, 88, 93); Semple (ib., xxi, 80); and Royds (ib., xxi, 83). Peacock particularly contributes (ib., xx, 61) a case of atresia of the orifice of the pulmonary artery in a girl æt. 13 years, the aorta communicating with both ventricles. He remarks upon this species of malformation, and gives two tables of collected cases, the first, in which the septum ventriculorum was complete (eight cases); the second, in which it was imperfect (twenty-six cases). Kelly (ib., xxi, 91) also gives a case of disease of the mitral valve during intra-uterine life.

Other cases are recorded by Bohn ('Angeborene Stenose und Insufficienz der Arter. Pulmon. bei einer Erwachsenen," 'Deut. Arch.,' v, 436), and v. Thaden ("Missbildung des linken Herzkammer," 'Zeitschr. f. rat. Med.,' xxxiii, 58). And a paper by Walkhoff bearing more or less on the same subject ("Das Gewebe des Ductus Arteriosus und die Obliteration desselben") may be found in the last volume (xxxvi, 109) of the latter periodical, now discontinued on account of Pfeufer's death.* A notice of an "adult heart without ventricular septum," in the Newcastle Pathological Museum, appears in the 'Brit. Med. Journ.,' 1870, ii, 190.

Sawyer, "Malformed Heart in a boy, æt. 10," 'Brit. Med. Journ.,' 1870, ii, 691; Balthazar Foster, "Mitral and Tricuspid Stenosis," ib., 591.

Aneurism.

The three following cases so much resemble one another that room alone for them must be found, among a number of abstracts.

Rindfleisch and Obernier ('Deut. Arch.,' v, 539) give the case of a man æt. 65, who in May, 1867, presented symptoms diagnosed as due to aneurism of the ascending aorta. In March, 1868, there was great cyanosis, distinct venous pulse in neck and liver; increase of heart dulness to the right; a blowing systolic murmur over the whole cardiac region, most distinct between the insertions of the two fifth cartilages;

* Henle's 'Schlusswort" (ib., 277) regarding his co-editor and their common work, concluded by Pfeufer's death, deserves reading.—A. B. S.

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the second sound was clear, but weak over the aorta and at the apex, inaudible in the pulmonary artery. There was a loud systolic murmur behind, especially at the fourth and fifth dorsal vertebræ. The patient died June 23, 1868. The autopsy showed great enlargement of the venous trunks of the systemic circulation, and extensive adhesion of the visceral and parietal layers of the pericardium. A very thick, somewhat callus-like mass of connective tissue was found to the right of the aorta, exactly opposite an aneurismal dilatation of the latter. There was advanced dilatation of the right auricle and ventricle, with relative insufficiency of the tricuspid. The calibre of the pulmonary artery was narrowed by a sac-formed aneurism of the aorta which compressed it from behind forwards. This was regularly hemispherical, 3·3 centimètres in height, 4·5 centimètres broad, and communicated with the aorta by a narrow circular opening. The lower border of this opening was exactly one centimètre above the insertion of the anterior and right valves. The aorta was atheromatous, the valves of the left side normal. They insist upon the importance of the morbid change in the pericardium, as the real cause of the aneurism, and call attention to the presence of the systolic murmur at the back for the diagnosis of pulmonary stenosis, by which it was probably caused.

Colberg has left on record (ib., 565) a case of very much the same kind in a man, æt. 36. Immediately over the aortic valve was found an aneurism of the size of a pigeon's egg, situated to the right and in front, which almost completely compressed the pulmonary orifice. The valves were healthy; the left ventricle was not hypertrophied.

In Peacock's case ('Path. Soc. Trans.,' xix, 98) the aneurism, about the size of a cricket-ball, projected from the front of the transverse portion of the arch of the aorta, and pressed on the pneumogastric and phrenic nerves.

Fischer-Dietschy, "Experimentelle Beiträge zur Diagnose der Aneurysmen," 'Deut. Arch.,' vi, 530; Ebstein, "Zur Casuistik der durch Aneurysmen der Aufsteigenden Aorta bedingten Stenose der Art. Pulmon.," ib., 281; Praëll, "Zur Diagnose des Aneurysma am Aortenbogen," 'Virch. Arch.,' xlv, 518; Wyss, "Aneurysma Dissecans der Aorta Ascendens," 'Arch. d. Heilk.,' x, 490; Piez, "Anévrysme de l'Aorte Thoracique: sac formé en partie par les parois de l'Œsophage," 'Gaz. des Hôp.,' 1869, 341; Vallin, "Observation d'Anévrysme de l'Aorte ouvert dans la bronche gauche," 'L'Union Méd.,' viii, 349; Id., "Anévrysme de l'Aorte," 'Gaz. des Hôp.,' 1869, 199; Gigard, "Anévrysme de l'Aorte ouvert dans la bronche gauche," 'Lyon Méd.,' iv, 392; Molard, "Anévrysme double du tronc Brachio-céphalique et de l'Aorte Thoracique descend. au dessous de la crosse," 'Rec. de Mém. de Méd. Milit.,' xxii, 292; Balfour, "Further Observations on the treatment of Aneurism by Iodide of Potassium, with additional cases," 'Edin. Med. Journ.,' xv, 47; Hutchinson (Philadelphia), "Aneurism and Calcareous Degeneration of the Aortic Valves," 'Amer. Journ. of Med. Sci.,' lix, 134; Atlee, "Case of Thoracic Aneurism, with some remarks upon continued obstinate eructation as a symptom of the disease," ib., lviii, 103; Hall, "Dilatation of the right side of the Heart, and Aneurism in a Pedestrian," 'Lancet,' 1869, i, 712; Duckworth, "Case of Aneurism of the descending Thoracic Aorta, which burst into the Pericardium and left Bronchus," 'Edin. Med. Journ.,' xiv, 1075; Hayden, "Vasomotor Erethism simulating Aneurism of the Arteria Innominata," 'Brit. Med. Journ.,' 1869, i, 49; Fagge, "Dissecting Aneurism of Aorta," 'Med. Times and Gaz.,' 1869, ii, 393; Moore, "On the differential Diagnosis of Abdominal Aneurism," 'Dubl. Journ.,' xlviii, 9. Other cases may be found: 'Dubl. Journ.,' xlvii, 205; ib., xlxix, 479; 'Brit. Med. Journ.,' 1870, i, 536; ib., ii, 650, 651, 697; "Of the Arch of Aorta," ib., 1870, i, 37, 537; "Of Ascending Aorta," ib., 1870, i, 273; ii, 143, 472, 706; 'Path. Soc. Trans.,' xix, 111, 190; xx, 142; 'Dubl. Journ.,' xlviii, 18, 213;

"Of Thoracic," 'Path. Soc. Trans.,' xix, 182; 'Lancet,' 1870, ii, 111; 'Brit. Med. Journ.,' 1870, i, 437; "Of Abdominal," ib., 1870, ii, 116, 144, 692; 'Path. Soc. Trans.,' xix, 177, 182, 134; 'Dubl. Journ.,' xlviii, 212; "Of Pulmonary Artery," 'Lancet,' 1870. ii, 706; 'Brit. Med. Journ.,' 1870, ii, 656; Habershon, 'Guy's Hosp. Rep.,' 1870, 389.

Other papers relating to diseases of the organs of circulation are:

Riegel, "Doppelton in der Arteria Cruralis bei Aortaklappen-insuficienz," 'Deut. Arch.,' viii, 129; Immermann, "Strictur beider Hauptäste der Lungenarterie und ihrer ersten Verzweigungen in Folge chronischer interstitieller Pneumonie," ib., v, 235; Niemeyer (P.), "Entwurf einer einheitlichen Theorie der Herz-Gefäss- und Lungengeräusche," ib., viii, 136; Moxon, "On the Nature of Atheroma of the Arteries, with a description of a remarkable case of Arteritis," 'Guy's Hosp. Rep.,' 1870, 431; Johnson, "Remarks on Hypertrophy of the Muscular Walls of the minute Arteries in cases of chronic Bright's Disease," 'Brit. Med. Journ.,' 1870, i, 381; Sankey, "Small Arteries and Capillaries in Brain Disease," 'Journ. of Ment. Sci.,' xiv, 446; Feltz, "On a mode of Sudden Death in acute and chronic Diseases of the Chest," 'Gaz. des Hôp.,' 1870, 249; Archer, "Disease of the Heart, believed to be due to Miasmatic Poison," 'Path. Soc. Trans.,' xx, 129 (cf. Durosiez, p. 56 of this Report); Pye-Smith, "Suppuration of the Heart," ib., xxi, 94; Merkel, "Zur Casuistik der fötalen Herzerkrankungen," 'Virch. Arch.,' xlviii, 488; Rotureau, "Maladie du Cœur: pulsations artérielles remarquablement lentes: ischémie cérébrale: éclampsie: mort," 'L'Union Méd.,' ix, 331; De la Harpe, "Ralentissement des Battements du Cœur par la Compression de la Carotide," quoted in 'Lyon Méd.,' iv, 624; Flint, "On the Diagnostic Character, Mechanism, and Pathological significance of the Mitral Direct or Obstructive Cardiac Murmur, and on the occurrence of a Tricuspid direct Murmur," 'Bellevue Charity Hosp. Rep.,' 1870; Id., "On the mode of obtaining the Venous Hum, and the value of this physical sign," ib. (see 'Amer. Journ. of Med. Sci.,' lix, 464).

E. Diseases of the Organs of Digestion.

Affections of the Mouth, Pharynx, and Salivary Glands.

Fagan ('Brit. Med. Journ.,' 1869, ii, 489) gives the case of a healthy boy, of two years old, who was affected with pseudo-membranous stomatitis, caused, probably, by his taking milk from a cow with abscess of the udder.

Thorne Thorne ('Rep. of Med. Off. Priv. Counc.,' 1869, 294), from his observations in various towns in England, draws the following conclusions:—(1) A disease appears sometimes to have been produced in the human subject when the milk of cows suffering from the foot-and-mouth disease has been freely used without being boiled. There is no evidence to show whether this affection is of a specific nature or not; but it seems to consist in a derangement of the alimentary canal, accompanied by febrile disturbance, the presence of vesicles on the mucous membrane of the mouth and tongue, which, having been ruptured, leave superficial ulcerations, and, at times, an herpetic eruption about the exterior of the lips. (2) In a very large number of cases the milk of cows undoubtedly affected has been used without producing any noticeable morbid effects. This absence of result may, though only to an inconsiderable extent, have been due to the smallness of consumption and the boiling of the milk. Thorne does not find that any disease in the human subject has been attributed to the use of the flesh of animals suffering from the same disease.

Pye-Smith ('Virch. Arch.,' l, 462), in answer to a paper of Hartsen's on "Gingivitis" (ib., xlvi), publishes three cases of hæmorrhagic stomatitis in adults.

Brochin ('Gaz. des Hôp.,' 1869, 157) quotes from Gosselin the case of a man, æt. 38, suffering from advanced phthisis, who presented a superficial ulceration of the tip, and especially the under side, of the tongue, of some weeks' standing. After discussing whether it might be of cancerous origin or due to tertiary or primary (chancre) syphilis, Gosselin concludes that it was analogous to ulcers developed in the larynx in phthisical patients (cf. Trélat, under "Phthisis," in this Report).

De Smeth ('Presse Méd. Belge,' 1869, 253) gives the history of a man, æt. 48, who suffered from chronic catarrh of the pharynx (follicular pharyngitis), followed by emotional (psychical) disturbance and anæmia. He recovered under local and general treatment—a tonic regimen, exercise in the open air, rest of the affected organ, cold affusions of the whole body, followed by prolonged dry rubbing; and preparations of iron and quinine. A strong solution of nitrate of silver was applied locally. After two months' treatment the patient was well.

Luschka ('Virch. Arch.,' l, 161) publishes a short paper on warty tumours ("Papillargeschwülste") of the pharynx, with one case in a man, and another in an ox.

Grohe ('Berl. klin. Woch.,' 1869, 334) records a case of phlegmonous cellulitis of the neck (angina Ludovici) in a man, æt. 48. Death was caused by very considerable œdematous and purulent infiltration of the soft parts of the pharynx and entrance of the larynx. This had already spread to the lower portion of the neck, though it was most marked in the upper, where the lymph-glands were most swollen. The patient had been under treatment from March 22—28, 1869, for a chronic ulcer of the leg, which had become gangrenous. On the 26th he was attacked with fever, a heavy feeling in the head, diarrhœa, &c. On the 27th he saw objects of a yellow colour (xanthopsia). On the 28th there was slight icteric coloration of the sclerotic; on this latter day he was removed to the medical wards, on account of the angina which had set in the day before. On the 30th he died from suffocation. The rapid course of the affection (within four to five days), and the changes found after death, proved that the latter was due to so-called angina Ludovici.

Wagner ('Jahrb. f. Kinderheilk.,' ii, 335) gives the incubation stage of angina parotidea (mumps) as twelve to twenty-one days.

Duroziez ('Gaz. des Hôp.,' 1870, 371) records five cases of mumps. Two children, æt. 5 and 6, had mumps, Dec. 25, 1856, with no further sequelæ. A cousin, æt. 20, in the same house, had slight stiffness of the right jaw, which disappeared, and reappeared in the left. On the 28th the right testicle was affected, and there was slight mucopurulent discharge from the urethra; the left testicle was not attacked. There was no fever, and all pain was gone by the 4th January. A woman, æt. 35, working in the same house, was affected so very slightly that the diagnosis was doubtful for some time; a young man, also in the same house, had no swelling, but delirium, nausea, pain in the head

and neck, salivation, and a feeling of pressure in the right submaxillary region.

Blondeau (ib., 315) reports an epidemic of mumps occurring in four men employed in the same house, somewhat remarkable from the fact that the persons attacked were twenty years of age or older, and that in the first of the cases reported the double affection of the parotids was accompanied, while still evident, with double orchitis, not, therefore, simple metastasis. The fourth was suffering at the time from gonorrhœa, and the fact that throughout the period during which he was ill with mumps he had no testicular affection is made the subject of a short note on the denial by some writers of any metastasis in this disease.

Glynn, "Cancrum Oris," 'Brit. Med. Journ.,' 1869, i, 248; Legge, "Parotitis in a boy, æt. 16, with Atheromatous Arteries, Atrophied Kidneys, and Pericarditis; Death," ib., 247; Fournié, "Quelques cas de Pharyngites pseudomembraneuses," 'Gaz. des Hôp.,' 1870, 315; "Abcès rétropharyngiennes idiopathiques, &c.," 'Arch. Gén. de Méd.,' 1869, ii, 593.

Affections of the Œsophagus.

Steffen ('Jahrb. f. Kinderheilk.,' ii, 143) publishes a list of the morbid changes observed in the œsophagus in forty-four children, in three only of whom a diagnosis was made during life. Hyperæmia, catarrhal inflammation of the mucous membrane, and follicular ulceration, were found in several cases, as well as croup and diphtheritis, either independently or combined. The croup attacked mainly the summits of the mucous folds. Diphtheritis, by itself, occurred only once to any large extent; in the other cases it was found in streaks or islets. The affection never extended beyond the cardiac orifice, though in several cases a croupous exudation had spread from the pharynx throughout the œsophagus and into the stomach. In one case gangrene was met with in combination with noma, gangrene of the pharynx, larynx, and upper half of the trachea. Thrush was found in the œsophagus twice, with its simultaneous occurrence in the stomach, and in two cases also in the upper part of the duodenum. The pustules of varioloid were also found in the œsophagus in two cases.

Griffin ('Lancet,' 1869, ii, 337) gives the case of a healthy man, æt. 49, who, after a moderate (?) meal—a rent-day dinner—was attacked with violent retching, followed by emphysema of the cellular membrane above both clavicles. Next morning he died. The autopsy showed a longitudinal slit in the œsophagus, immediately above the diaphragm.

The majority of cases of œsophageal mischief seem to belong rather to the province of surgery. Some, at least, of the following may claim to be included under medicine:

Huber, "Dysphagia Strumosa," 'Deut. Arch.,' vi, 106; Hoffman, "Zur Erweichung des Œsophagus bei Erwachsenen," 'Virch. Arch.,' xlvi, 124; Kraus, "Strictura Œsophagi tuberculosa," 'Allg. Wien. Med. Zeitg.,' 1869, 148; Broca, "Rétrécissement spasmodique de l'Œsophage," 'Gaz. des Hôp.,' 1869, 358; Vigla on same subject, ib., 441, and Gallard, 'L'Union Méd.,' viii, 194; Annandale, "Case of Congenital Malformation of the Œsophagus," 'Med. Press and Circ.,' 1869, i, 201; Murchison, "Cancer of the Œsophagus, with fistulous opening into Trachea, and Cancer (tubercle?) of the apex of the right Lung," 'Trans. Path. Soc.,' xix, 224; Mackenzie, "Ulcer of the Œsophagus, supposed to be non-cancerous," ib., 213; id., "Epithelial Cancer of Œsophagus,"

ib., xx, 163; id., "Two cases of Stricture of the Œsophagus," 'Lancet,' 1870, ii, 837; Green, "Perforation of the Œsophagus by a bougie; fatal," 'Brit. Med. Journ.,' 1870, ii, 650.

Affections of the Stomach.

Pollock ('Lancet,' 1869, i, 289) publishes a clinical lecture on nervous dyspepsia, in which he gives a very good and by no means overdrawn picture of the disease as it ordinarily occurs. Women suffer most from it, but it is by no means rare among men. Many of its symptoms are so allied to hysteria that the functional disorder of the stomach may be overlooked. The patient complains of pain in the chest or "heart," which goes right through to the shoulders, and is often so bad that she can scarcely breathe. These pains come on in spasms, and are often accompanied by palpitation. They are generally worse after food; the patient is troubled with wind and generally constipated bowels. The tongue may be furred or unnaturally clean; there is sickness, anorexia, foul breath, and an unpleasant taste in the mouth, especially on waking in the morning. The nervous symptoms are very variable—great depression and anxiety, general nervousness, headache, noises in the ears, icy chills running up the spine, curious sensations of live things in the stomach and bowels, flutterings about the epigastrium, ball in the throat, &c. The catamenia may or may not be regular; often the patient has passed the climacteric period a year or two. The most important part of the treatment consists in great attention to the diet. At the commencement he gives a draught containing bicarbonate of potash, rhubarb, &c., with tincture of valerian, if the nervous symptoms are prominent, and every now and then the Pil. Aloës et Assafœtidæ of the 'British Pharmacopœia,' or Assafœtida alone if the bowels are regular. Later on, when the tongue is clean and the stomach less irritable, quinine is of service.

Kussmaul ('Deut. Arch.,' vi, 455) gives in full twelve cases of dilatation of the stomach, in which he employed the pump to remove the contents of the latter, and subsequently washed the organ out with medicated fluids. The stomach-pump used was first constructed in America (by Wyman), and used for the evacuation of empyemas. Kussmaul made use of it for his new method, which he laid before the meeting of German naturalists and physicians at Frankfort, in 1867. The idea occurred to him first in the treatment of the following case, which is given very fully:—A girl, æt. 25, had suffered from disorder of her stomach since her eleventh year. On her admission into hospital in April, 1867, her stomach was enormously distended, the dilatation being probably due to stenosis of the pylorus, hypertrophy of which part was recognised. There was chronic catarrh of the stomach, very great loss of flesh, and peculiar spasmodic attacks, with cramps in the extremities. For some time relief was obtained by the use of Vichy water, iodide of potash, &c.; but on July 22 she was as bad as ever, the distress in the stomach and the frequent eructation causing great anguish and preventing sleep. The pump was used and about three litres of the acid contents removed from the stomach, which was washed out afterwards with Vichy water; this was followed by great relief. The

operation was repeated on the 25th; on the 28th she had further vomiting, and five to six pints more were pumped out. The pumping and washing were repeated at intervals of two to four days, and, as she improved, less frequently. In the last matters evacuated there were no sarcinæ found; these growths had been present in great numbers in the fluids first removed. On Dec. 12, 1867, the patient was discharged well, her pale and thin condition having changed to one of bloom and strength. No dilatation of the stomach could be detected; her general functions were good, and she was perfectly able to do her work. In the middle of May she weighed 78½ lbs., and on Dec. 12, 106 lbs. Up to May, 1869, there had been no return of the stomach affection. He gives eleven other cases in which the same treatment was employed. He defines the sort of cases in which it may be expected to be effectual. It cannot cure, though it may give the greatest relief, in (1) carcinomatous stricture of the pylorus; (2) very considerable cicatricial stenosis of the latter; (3) moderate stenosis in cases in which, in consequence of chronic gastritis, the walls of the stomach have undergone a permanent degeneration. In explanation of the extraordinary results obtained, he argues that the paralysed stomach regains its contractility, and is thus able to overcome any moderate impediment, just as a dilated urinary bladder does after repeated use of the catheter. At first (l. c., p. 470) he had thought it extremely probable that the excessive dilatation of the stomach might transform the pyloric opening into a linear slit through which the passage of the contents would be difficult, but observations on the dead body did not confirm this view. The washing out of the stomach with Vichy or soda water has a very good effect in reproducing the normal power of digestion, in addition to the extraordinary relief of the general condition which usually and immediately follows the operation. The author discusses at length the mode of production of the peculiar convulsive attacks which are sometimes observed in patients suffering from pyloric stenosis, and concludes, not without reason, that they depend upon the deficiency of water in the blood and tissues, especially in those of the nerves and muscles, which is the consequence of the diminished absorption in the intestines.

Habershon ('Guy's Hosp. Rep.,' 1870, 399) gives the case of a woman, æt. 47, who presented a remarkable and unusual form of disease, the diagnosis of which was obscure. She had dropsy, and œdema of the abdominal parietes. After death was found sarcomatous disease of the pylorus, together with chylous serum in the peritoneum. He gives also two other cases in which the symptoms of the gastric disease were obscured. The first was that of a man, æt. 45, with spinal curvature and jaundice, in whom the liver was supposed to be affected. Here, though there was scarcely any vomiting, a large cancerous ulcer was found reaching from the pylorus for three inches at least into the stomach. In the second case, a man, æt. 44, vomiting, which had occurred earlier, was absent for several weeks before death; and this fact, though there was evident deposit in the pyloric region, had caused the supposition that the disease had commenced in the pancreas, and spread thence to the stomach. After death most extensive ulceration of the latter was found, both on the anterior and posterior surfaces,

reaching five or six inches from the pylorus; the mucous membrane was in a sloughing condition, and the pyloric valve destroyed. In this instance not only was the obstruction, as in the former case, removed by the ulceration, but the sensibility of the stomach also obliterated.

Harris ('Amer. Journ. of Med. Sci.,' lviii, 131) publishes the history and autopsy of cystic degeneration of the mucous membrane of the stomach. It occurred in a lady, æt. 53, whose usual beverage night and morning had for many years consisted of two cups of black tea, boiled down for two hours, and made excessively strong, like a fluid extract. The stomach was of fair size, and contained dark grumous fluid. The mucous membrane was congested, in places ecchymosed, rather thin, and presented an infinite number of minute roundish elevations, somewhat like minute vesicles. These, under the microscope, were seen to be cysts imbedded in mucous membrane, with thin fibrous walls, and lined by a layer of nucleated epithelium. There was marked fatty degeneration of the mucous epithelium and gastric tubules.

Toulmouche ('Arch. Gén. de Méd.,' 1869, ii, 272, &c.) divides a long article on ulcers of the stomach into two parts, the first treating of those due to simple inflammation of the mucous membrane, the second of those dependent on a cancerous origin. He gives seven cases of each class, with accounts of the autopsies, observed as far back as the years 1832-41. Beside the mere reports there is nothing particularly noteworthy, either in the cases themselves or in his remarks upon them.

Roth ('Virch. Arch.,' xlv, 300) publishes experiments on the artificial production of ulcers in the stomach—(1) by ligature of the arteries (as did Pavy in 1863), no effect being obtained on account of the free anastomosis set up; (2) by the introduction of nitrate of silver in solid masses in a pill (three grammes.). In this way ulcers were produced chiefly about the lesser curvature.

Johnson ('Brit. Med. Journ.,' 1870, i, 305) gives a case of hæmatemesis and perforating ulcer of the stomach in a woman, æt. 28, in which, after remarking on the symptoms and treatment, he allows that, though the history leaves very little room for doubt, it is, of course, not certain, recovery having taken place, that there had been any perforation of the stomach. At any rate, perfect rest of the organ, in these doubtful cases, is absolutely necessary.

Wilson Fox ('Path. Soc. Trans.,' xix, 239) gives at length the case of a boy, æt. 11, who had swallowed about an ounce of hydrochloric acid. On the fourteenth day after, he had profuse hæmatemesis and died. The autopsy showed an ulcer about an inch and a half from the pyloric ring, in the centre of which was an artery completely eroded.

Habershon, "Diseases of the Stomach," 2nd ed., London; Moxon, "Phlegmonous Gastritis," 'Brit. Med. Journ.,' 1870, ii, 473; Fenwick, "On Atrophy of the Stomach," 'Lancet,' 1870, ii, 78; Gallard, "Troubles digestifs dus à l'Alcoolisme," 'L'Union Méd.,' viii, 886; Scheuer, "Ein Fall von perforirendem Magengeschwür bei einem 12 jahrigen Mädchen, mögliche Wirksamkeit des Ferri Collas," 'Allg. Wien. Med. Ztg.,' 1869, 336; Bell, "Account of a case of Gastric Ulcer terminating by Perforation, which ran an unusually rapid course," 'Edin. Med. Journ.,' xiv, 775; Redwood, "Two cases of Perforation of the Stomach; one recovery," 'Lancet,' 1870, i, 647. Other cases of ulcer of the stomach are given by Gibbon, 'Brit. Med. Journ.,'

1870, i, 537; Murchison, ib., 37; Murray, 'Path. Soc. Trans.,' xx, 169; Black, 'Amer. Journ. Med. Sci.,' lix, 279. Cases of malignant disease by Thomson, ib., 127; Stapleton, 'Med. Press and Circ.,' 1869, i, 47 Barwell, 'Path. Soc. Trans.,' xix, 237; Bristowe, ib., 228; Murchison, ib., 211; id., ib., xx, 167; Cayley, ib., 170. Other papers are—Haskins, "Cases of great Enlargement of the Stomach, with remarks," 'Amer. Journ. Med. Sci.,' lvii, 57; Mack, "Peculiar case of Hæmatemesis," 'Glasg. Med. Journ.,' 1869, 554; Spender, "The Hypodermic Injection of Morphia as a remedy for obstinate Vomiting," 'Brit. Med. Journ.,' 1869, ii, 415; Johnston, "On the Subcutaneous Injection of Morphia as a remedy in Sea-sickness," 'Med. Times and Gaz.,' 1869, i, 381; Berchon, "Un Remède assuré contre le mal de mer," 'Gaz. des Hôp.," 1869, 69; Best, "Death from accumulation of Hair in the Stomach of a Woman," 'Brit. Med. Journ.,' 1869, ii, 630; Russell, "A case in which the Cavity of the Stomach was occupied by an enormous mass of Human Hair," 'Med. Times and Gaz.,' 1869, i, 681; Inman, "Human Hair in the Stomach," ib., ii, 6.

Affections of the Intestines.

Gueneau de Mussy ('Union Méd.,' vii, 99) in his clinical lectures on chronic diarrhœa, discusses its treatment by different drugs. In cases where the stools contain masses of slime, he lays great weight upon injections containing nitrate of silver (p. 142). The best method of administration, according to him, is to dissolve about ·15 or ·20 centigr. in about 20 grms. of water, and inject it into the rectum through a glass syringe, and follow it up with a large quantity of distilled water, the operation being repeated every day or two.

Simon (ib., 725) gives a rare case of diarrhœa in a South American woman of 55, which had lasted twenty years, and had been treated without success in all sorts of ways in America and France. After taking on a choleraic form it was cured in one month by sulphate of quinine, in Feb. 1862. In April of the same year the patient had a relapse; and again in 1864, '5, '7, and '8, quinine, after other drugs had failed, bringing about recovery as before. There could be no possible doubt that it was originally caused by miasmatic poison.

Ferrand ('Bull. Gén. de Thérap.,' t. 77, p. 20) records a case of the same kind occurring in a soldier, æt. 42, in the Papal service, which, after lasting nine months and treated in every way, was suddenly cured by sulphate of quinine, suggested by the preceding paper.

Tartivel ('Union Méd.,' vii, 281) publishes at length two cases of obstinate chronic diarrhœa, cured by cold douches combined with hot-air baths. He gives shortly three other cases, treated in the same way, and is earnest in suggesting that death, which followed later in two of these, from cerebral softening and hæmorrhage, had nothing to do with the good results obtained by the water treatment of the diarrhœa.

Siredey (ib., 75) gives the case of a man, æt. 41, who presented symptoms of internal strangulation, which disappeared on the expulsion, per rectum, of a large quantity of intestinal mucosities. He had severe tenesmus, prolapsus ani, hyperæsthesia, and neuralgia in different parts; relieved by enormous doses of morphia injected subcutaneously, 0·5 centigr. in twenty-four hours. There was great wasting and loss of strength. These attacks, relieved by the passage of mucous, gelatinous concretions, or matter resembling false membranes, seem to have lasted

from 1852 to 1868, when the general condition was much better, and the constipation much less, the latter being overcome by Pullna salts, calomel, or scammony, given at the time, and causing later, often next day, the expulsion of membranous mucous matters. The author takes the opportunity of collecting cases recorded by other writers. He lays great stress upon the employment of purgatives, especially the waters of Pullna, Homburg, Nauheim, Niederbrunn, Kissingen, &c. He concludes that the affection should be referred to a neurosis of the intestines, occurring chiefly in hypochondriac and hysterical individuals.

De Courval (ib., 481) gives a similar case in a woman, æt. 55, who after the use of injections got rid of a cylindrical membranous body, eight centimètres long, repeating the folds of the large intestine. The injections contained nitrate of silver and bromide of potassium. He considers the internal use of chlorate of potash, in doses of five grammes a day, very efficacious.

Habershon ('Lancet,' 1869, i, 837) contributes a case of chronic diarrhœa with fatal hæmorrhage in a lady who had resided for several years in India. The autopsy showed that the walls of the intestine were extremely thin and semitransparent; both muscular and mucous coats were greatly wasted. There was simple atrophy of the villi, but neither ulcer nor cicatrix throughout the intestinal tract.

Aufrecht ('Berl. klin. Woch.,' 1869, 315) gives the case and autopsy of a female, æt. 42, who died of diarrhœa. He found twelve ulcers in the ileum, all of which alike occupied the whole breadth of the intestine, and varied in length from 2″ to 5″. The portions of mucous membrane between them were in many places not longer than the ulcers themselves. The margins of the latter were completely smooth, slightly swollen and injected, with a pale base, showing here and there several radiating lines slightly raised above the surface. Within several of these ulcers were small breaches of surface (Defecte), a little larger than lentil seeds, penetrating almost to the muscular tissue, with the appearance of having been punched out; their base also was pale and smooth. The mucous membrane of the whole of the large and small intestine, as well as the base of the ulcers in several places, showed well-marked amyloid reaction, as also did the Malpighian bodies of the spleen, kidneys, &c. In the intestinal villi and the mucous membrane in the neighbourhood of the ulcers were corpuscles resembling corpora amylacea, only larger. There was an old syphilitic nodule of connective tissue in the liver. He holds that the degeneration of the vessels, and, perhaps, also the deposit of the corpora amylacea in the mucous membrane, had led to a death, from innutrition, of the latter, and the consequent development of ulcers.

Tschudnowsky (ib., 205) publishes at enormous length the case of a man, æt. 23, in whom a typhoid ulcer led to perforation of the intestine and entrance of gas into the abdominal cavity. On auscultation of the abdomen over the collection of gas he heard a well-marked amphoric murmur, synchronous with the respiration, stronger and longer with inspiration, shorter and weaker with expiration. His explanation is that the murmur was caused by the entrance and exit of gas through

the perforation, and believes that it occurs only in those cases in which the latter is tolerably large and not obstructed.

Wernick ('Virch. Arch.,' l, 138) records a case of malignant stricture of the upper part of the jejunum from epithelial cancer, with dilatation of the duodenum; death followed from rupture of the latter during a fit of severe vomiting.

McEvoy, "A Worm discharged through an Abscess" (lumbricus, in a boy, æt. 14; no autopsy), 'Med. Press and Circ.,' 1869, ii, 6; Davey, "Abdominal Puncture in Tympanites," 'Brit. Med. Journ.,' 1869, ii, 210; Mahony, "Ulceration of Intestine causing Sudden Death," ib., 428; Aufrecht, "Entzundung des Processus vermiformis, Perityphlitis; Phlebitis und Thrombose der Vena Mesenterica Magna," 'Berl. klin. Woch.,' 1869, 308; Behm, "Vereiterung des Wurmförmigen Fortsatzes," 'Deut. Klin.,' 1869, 269; Subbotin, "Ueber die Anwendung des Extr. Semin. Physostigmatis Venenosi bei atonischen Zuständen des Darmkanals," 'Deut. Arch.,' vi, 285; Quinquaud, "Choléra sporadique sec; mort; autopsie; dégénérescence granulo-graisseuse des muscles de la vie de relation; quelques mots sur les traces polygraphiques des crampes," 'Gaz. Méd. de Paris,' 1869, 471; Vallin, "Observations d'Hémorrhagie intestinale mortelle chez un cas de Phthisie aigue simulant une Fièvre typhoide," 'Union Méd.,' vii, 457; Thorowgood, "On Torpor of the Colon as a complication in Dyspepsia," 'Lancet,' 1869, i, 559; and see 'Path. Soc.,' xix.

Intestinal Obstruction.

Fagge ('Guy's Hosp. Rep.,' xiv, 272) writes an important paper on this subject, the length of which precludes any very faithful abstract. He gives fifty-four cases, recorded among 4000 autopsies at Guy's Hospital between 1854-1868, inclusive, the cases of obstruction thus yielding an average of 1·4 per cent. He considers that, hernia excluded, the various forms of intestinal obstruction fall naturally under six heads.

(1) Those in which the gut is plugged by its contents—gall-stones, intestinal concretions, masses of ingesta, &c., in illustration of which he gives four cases, a proof of the rarity of this form.

(2) Intussusceptions or invaginations, of which he gives eight cases, one of the rectum, one ileo-cæcal, and four of the small intestine.

(3) Strictures, the disease being seated in the substance of one or more of the coats, and ultimately narrowing the calibre of the intestine. He gives notes of twenty-two cases of this kind; the seat was six times in the rectum, six in the sigmoid flexure, three in the descending colon, three in the splenic flexure of the latter, once in the hepatic flexure of the latter, once in its ascending portion, once in the cæcum, and once in the cæcum and ileum. He adds two other cases, one of a child, æt. 12, in whom the narrowing appeared to be due to the contraction of the peritoneal coat, and another of cancerous obstruction of the rectum in a woman.

(4) Contractions, the disease beginning not within but outside the intestinal coats; sometimes on the serous surface of the intestine, sometimes in the mesenteric glands. Of sixteen cases given, three only affected the large, thirteen the small intestine.

(5) Volvuli, including folds and twists of the intestine, in which, without any new formation, the obstruction is due simply to pressure of adjacent portions of the bowel or its mesentery, or both. Six cases.

(6) Internal strangulation; of seventeen cases, it was produced in—

(*a*) Six cases by a peritoneal band generally connected at one end with the mesentery, or by matting together of peritoneum.

(*b*) Three, by a band derived from the omentum, or the margin of an aperture in that membrane.

(*c*) One, by an arch formed, by the mesentery, of a coil of ileum descending into the pelvis.

(*d*) One, by the pedicle of an ovarian tumour.

(*e*) One, by a band or bands connected with the vermiform appendix.

(*f*) Five, by a diverticulum from the ileum, with a band attached to its extremity.

(*g*) One, by the neck of an internal hernial pouch.

(*h*) One, quoted from the 'Path. Soc. Trans.,' formed by injury or disease in the abdominal parietes.

In the earlier portion of the paper he discusses the general diagnosis of the seat of the obstruction, more especially the scantiness or suppression of urine, in obstruction of the small intestine, to which Barlow ('Guy's Hosp. Rep.,' s. 2, ii, 367) first drew attention.

The following may serve as further cases in illustration of the preceding:

Bock, "Ein Fall von Invagination des Darms mit sehr protrahirten Verlauf beim einem 10 jahr. Knaben," 'Jahrb. f. Kinderheilk.,' ii, 43; Baar, "Ein Fall von Intussusception des Darmes," 'Allg. Wien. Med. Ztg.,' 1869, No. 57; Birch-Hirschfeld, "Fall von geheilten Invagination des Darmes," 'Arch. de Heilk.,' x, 108; Fräntzel, "Enterotomy in cases of Intestinal Obstruction," 'Virch. Arch.,' xlix, 164; Gruber, "Ein von einer grossen Ileumportion und einer kleinen secundären Schlinge der Flexura Sigmoides geknüpfter Knoten (Schleife), dazu eine Zusammenstellung der Fälle derselben Gattung und der daraus resultirenden Classification," ib., xlviii, 468; Stein, "Die Punction des Abdomen bei Pneumatosis gastro-intestinalis," 'Deut. Arch.,' vi, 450; Thomas, "Occlusion Intestinale datant de trente-trois jours; guérison et rétablissement du cours normale de matières," 'Gaz. des Hôp.,' 1869, 275; Id., "Occlusion du gros Intestin; mort subite," ib., 394; Richelot, "Note sur deux cas d'étranglement interne; emploi des lavements d'Eau de Seltz, des lavements de Tabac, et de l'insufflation de fumée de Tabac. Guérison," 'Union Méd.,' viii, 25; Fochier, "Etranglement interne, produit par une bride epiploique," 'Lyon Méd.,' 1869, i, 554; Buckler, "On Obstructed Bowel and its Treatment, with a case," 'Amer. Journ. of Med. Sci.,' lvii, 68; Williams, "Cancer of the Rectum and Liver, with Stricture of the Rectum; death; autopsy," ib., 381; Cummins, "Case of Intestinal Obstruction," 'Dubl. Quart. Journ.,' xlvii, 475; Sutton, "Intestinal Obstruction," 'Brit. Med. Journ.,' 1870, i, 55; Fenn, "Case of Intestinal Obstruction," ib., 398; Madge, "A Case of Intestinal Obstruction lasting forty-six days," 'Lancet,' 1869, ii, 80; Eastes, "Case of Intussusception treated by Inflation and Distensive Enema; recovery; remarks," ib., 669; Wilks, 1—"Intussusceptio in an Infant cured by Inflation of the Bowel;" 2. "Tumour in the right Hypochondriac Region; Chronic Intussusceptio," ib., 1870, i, 731; Air, "On a Case of Strangulation of the Intestine and Hæmorrhage into the Abdominal Cavity," ib., 764; Lucas, "A Case of Intussusception cured by Inflation," ib., ii, 183; Whyte, "Case of Ileus relieved by Inflation," 'Med. Times and Gaz.,' 1869, ii, 622; Orford, "Ileus relieved by Inflation," ib., 669; Forster, "Two Cases of Colloid Cancer of the Large Intestine," 'Guy's Hosp. Rep.,' xiv, 377; and see 'Path. Soc. Trans.,' xix, 197, 207, 221; xx, 180, 181.

Dysentery.

Pfeiffer ('Zeitschr. f. Parasitenkunde,' i, 1) gives a historical review of the occurrence of dysentery in Thüringen. Hufeland, in the epide-

mic of 1795, had already recognised the contagious principle in the stools of dysenteric patients. No accounts of any outbreak since the widespread epidemic at the end of the last century exist. In 1868 dysentery was so prevalent in Weimar that about 1200 in a population of 15000 were attacked, and at least fifty died. The epidemic commenced June 15, and gradually died out towards the middle of September. It was most common in the narrowest and most thickly inhabited streets, and appeared first in the same districts of the town in which typhus (typhoid?) and cholera had occurred in 1866, though it was by no means confined to them.

Hallier (ib., 71) was supplied by Pfeiffer with the necessary materials for his investigation, and claims to have discovered the parasite which is the cause of dysentery. The vegetable growth found in the stools of patients affected with this disease is so similar to that found in the evacuations of cholera, typhus (typhoid?) fever, and other infectious diseases the chief seat of which is the intestine, that it would be impossible to employ it by itself as a means of distinguishing these affections. At the same time, he holds that the spores found in the diseases mentioned have a different origin. Experiments made by planting prove that the parasite found in dysentery is the sporule of an entirely distinct fungus, not obtained by the cultivation of any other micrococcus, and apparently unknown to most observers. Whether it be the cause, or only an accompaniment of the affection, can be settled by experiment alone.

Dyes ('Journ. f. Kinderkr.,' 1870, liv, 317) observes that while some autumns pass without any epidemic of dysentery, diarrhœa, simple intestinal catarrh, may be very prevalent. He considers that the former complaint is due, not to the unripe fruit, which merely sets up diarrhœa, but to a peculiar viscous pellicle (smut). In some years, more than in others, it covers the fruit, more especially plums, and, according to him, is composed of animal parasites. He holds (p. 321) that the mildew of the fruit, which sets up dysentery in man, has a very great resemblance to that of the fodder which in cattle causes the foot-and-mouth disease in all its varying forms. To oppose its effects in men, chlorine water should be administered to destroy the parasites, and this treatment, combined with one promoting skin-action, prevents altogether the dysentery which would be provoked by such fruit.

Basch ('Virch. Arch.,' xlv, 204) gives, with microscopical figures, the changes he found, while at Puebla, in the bodies of patients who had died of dysentery. They were often seen best in the small intestine, because there they were less advanced. After injection follows thickening or infiltration of the submucous connective tissue; the mucous membrane undergoes granular degeneration; the epithelium is thrown off. Ulcers are rarely found in acute dysentery. Fungous growths occur more frequently in the diseased tissue, penetrating even to the blood-vessels.

Huette ('Arch. Gén. de Méd.,' 1869, ii, 129) describes, under the name of dysenteric arthritis, the affection of the joints which sometimes occurs after recovery from epidemic dysentery. After briefly reviewing the accounts of former writers on the subject (Zimmerman, 1765;

Lepecq de la Cloture, 1765-67; Stoll, 1776-77; and Thomas, of Tours, 1835), he gives ten cases observed by himself in the epidemic which prevailed in the canton of Montargis in 1854. He discusses its mode of invasion and general symptoms, and considers it to be distinguished from true rheumatism by the absence of pyrexia and sweats, and of the complications on the part of the more important organs. He holds that it bears a very close resemblance to gonorrhœal rheumatism, except that the latter attacks only one or at most two joints. He sums up his paper with the conclusions that the affection does not occur in all epidemics of dysentery; that its appearance may depend upon some individual diathesis; that it almost always attacks a number of joints, has a varying duration of some weeks or months, and terminates in the majority of cases in resolution, rarely in suppuration and anchylosis. He believes it to be more rational to explain the metastasis of the affection by "a morbid affinity which, in cases of affected mucous membranes, determines a reflex pathological effect upon other tissues of the economy."

Affections of the Liver.

(*a*) *Suppurative hepatitis; abscess.*—Béhier ('Gaz. des Hôp.,' 1869, 458) gives the history and autopsy of a man, æt. 55, in whom cancer of the stomach had been diagnosed. The lesions after death showed the presence of chronic dysentery and abscess of the liver. The diarrhœa had existed for six months before his admission. Among other cases he mentions two in which suppuration of the liver was accompanied by acute or chronic dysentery in patients who had never been out of France. Boldly acknowledging the error in diagnosis, he insists that even with the most careful observation, after appealing to the severest bedside logic, and with whatever experience a man may have, such mistakes are possible.

Prud'homme (ib., 502) diagnosed abscess of the liver in a corporal, æt. 32, who had never been in Africa, but only in the Crimea and at Constantinople for a very short time, and had never had dysentery. By perforation of the diaphragm the abscess opened into the right pleura; thoracentesis was twice performed; before the second operation the thermometer stood at 41·5, the pulse was 120. Injections of carbolic acid were tried, without success, to disinfect the discharge, and of iodine with more avail. The patient succumbed at last to a fresh attack of pleurisy on the left side. The post-mortem appearances were such as might be expected from the course of the case.

Gallard ('Gaz. Hebd.,' 1869, 604) showed to the Société Médicale des Hôpitaux a patient, æt. 44, in whom puncture of the liver for abscess had been successfully performed under the following circumstances:—He also had never been out of France, and had been somewhat intemperate. In October, 1868, he was attacked with dysentery, which became chronic, continuing up to March, 1869, when liver-abscess was diagnosed. There were signs of "tubercles" at the right apex. Puncture with an exploratory trocar made in the sixth intercostal space, in

the axillary line, brought away only a little blood. Two days later another puncture, two centimètres lower, gave exit to pus; and after making an incision through the skin and cellular tissue, which was filled with charpie for the purpose of obtaining adhesive peritoneal inflammation, a bistoury was plunged in and gave exit to 250 grms. of a blackish pus, said to be "characteristic of hepatic suppurations." Pus continued to form for some time afterwards in small quantities. In the discussion which followed a suggestion of empyema was made.

Vèdrènes ('Rec. de Mém. de Méd. Milit.,' xxii, 329) gives a case of liver abscess which was opened, in a man, æt. 24. It followed purulent infection from wounds of the head and hand. The patient recovered.

Peacock ('Trans. Path. Soc.,' xix, 243) contributes the case of a man, æt. 31, a discharged soldier, in whom an abscess in the left lobe of the liver had burst into the right pleural sac, the opening between the two cavities, which were filled with a thick dirty yellow pus, being large enough to admit the whole hand easily. The lung was entirely compressed; there were several huge ulcerated spaces on its surface, by which the empyema had found its way to the bronchi a month before death. The colon displayed numerous ulcers over a large extent, some of old date, others more recent. The patient had gone to India at the age of twenty-one, had led a regular life, and had suffered from attacks of fever, but no serious illness. Three days after landing in England he was attacked with diarrhœa, and was never entirely well afterwards.

Lyons ('Med. Press and Circ.,' 1869, i, 9) relates a case of abscess of the liver in a woman, æt. 56. The autopsy showed a large multilocular abscess in the right side (*sic*) of the liver, together with three others of considerable dimensions. Within three years he had seen twelve cases of the disease, in one only of which jaundice was present.

The "new" treatment of abscess of the liver employed by Blanc ('Lancet,' 1869, ii, 77, &c.) consists in the application of Vienna paste (Potassa c. Calce, Ph. L.) between but not on the ribs. Of the four cases given, "in which it was employed successfully," the diagnosis in the first seems somewhat doubtful; in the three others the hepatic abscess had opened into the right lung, before the "new" treatment was adopted.

Heaton, "Three Cases of Liver Abscess," 'Brit. Med. Journ.,' 1869, ii, 8; Moore, "Extensive Hepatic Abscess," ib., 1870, ii, 693; Harley, "Injury to the Liver, resulting in Abscess," 'Lancet,' 1870, ii, 569.

(*b*) *Parenchymatous hepatitis; acute atrophy.*—Leichtenstern ('Zeitschr. f. rat. Med.,' xxxvi, 241) gives a case of acute "liver atrophy with recovery" in a woman, æt. 27. Five weeks before her admission into hospital she had four times vomited blood, and was supposed to be suffering from ulcer of the stomach. On admission there was slight icterus, symptoms of gastric catarrh, no pyrexia, and normal liver-dulness; the urine was strongly coloured with bile, and the stools were those usually found in jaundice. The icterus increased; the patient passed through successive conditions of apathy, delirium, depression, and coma. The liver was made out to be smaller, the spleen greatly enlarged. After five days she became better, but had another attack of

the same kind five days later, which lasted four days. On her discharge the diminution of the liver was most evident, and there was some enlargement of the spleen.

Jamieson ('Edinb. Med. Journ.,' xiv, 872) records the case of a woman, æt. 25, who in the middle of her first pregnancy was attacked with symptoms of gastric disturbance accompanied by jaundice, and lasting for several days. Six days after delivery by forceps she died in a comatose condition, having again suffered from the same symptoms as before. In the absence of any autopsy, the author considers himself justified in describing the case as one of acute yellow atrophy.

Murchison, "Acute Atrophy of the Liver," 'Path. Soc. Trans.,' xix, 248; Fagge, "Acute Yellow Atrophy of the Liver," ib., xx, 213; Anstie, "Case of Acute Atrophy of the Liver," 'Lancet,' 1869, ii, 740; Aron, "De l'Ictère grave à cause alcoolique," 'Gaz. Hebd.,' 1869, 739; Paulicki, "Ein Fall von Atrophia flava Hepatis," 'Berl. klin. Woch.,' 1869, 47; Schultzen und Riess, "Acute Phosphorus-poisoning and Atrophy of the Liver," 'Ann. des Charite-Krankenh.,' 1869, xv, 1.

(*c*) *Interstitial hepatitis; cirrhosis.*—Gee ('St. Bart. Hosp. Rep.,' v, 108) gives two cases of cirrhotic enlargement of the liver. In the first, a man, æt. 38, the liver weighed 100½ oz., and consisted of islets of hepatic substance separated by connective tissue; in the second, a woman, æt. 25, it weighed 104 oz., and though no trace of liver substance was visible to the naked eye, hardened sections soaked in chloride of lime showed the same structural elements. He doubts whether livers doubled in weight by the development of adventitious tissue could ever contract to such a degree as to deserve the name of cirrhosis in the ordinary sense of the word, and thinks that the same condition which mostly causes the liver to contract may also enlarge it; and that among hepatic lesions which have the latter result must be placed cirrhosis, *i. e.* a progressive interstitial hyperplasia of the connective tissue.

Cayley ('Trans. Path. Soc.,' xix, 253) records a case in which the history and effects of the disease closely resembled cirrhosis, in a man, æt. 62, but post-mortem the affection appeared to consist rather in the gradual atrophy of the secreting tissue. It seems to have come on independently of drink.

Duffin, "Case of Ascites dependent on Cirrhosis of the Liver, treated by Copaiba," 'Lancet,' 1869, i, 292; Steffen, "Zur Casuistik der Lebercirrhose," 'Jahr. f. Kinderheilk.,' ii, 211; "Cas de Cirrhose du Foie chez les Enfants," 'Lyon Méd.,' v, 469, quoted from 'Jahrb. f. Kinder.,' 1869.

(*d*) *Fatty liver.*—Perroud ('Lyon Méd.,' iii, 281) gives ten cases, the facts of which he considers sufficient to prove that fatty degeneration of the liver may be accompanied by great cachexia, anasarca, and anæmia, with a peculiar leaden hue of skin, resembling that of the cancerous, or even more so the miasmatic, cachexia. There is with these an absence of albumen, and of any well-marked signs which would explain the extreme cachexia by some organic lesion. Probably there is only general languor, fever, adynamia, with, usually, death from exhaustion. After death, besides the change in the liver, there is found fatty degeneration of the heart and kidneys. To this general condition he had already given the name of "polystéatose viscérale."

Semple, "Specimen of very large Fatty Liver," 'Path. Soc. Trans.,' xix, 241.

(*e*) *Carcinoma.*—Mettenheimer ('Deut. Arch.,' v, 439) publishes a case of carcinoma in a girl, æt. 20. The chief mass was found in Glisson's capsule, and in the ligaments between the liver on one side and the stomach and small intestines on the other. In addition there was carcinoma of the stomach, gall-bladder, &c.

Willigk ('Virch. Arch.,' xlviii, 524) found, in a man, æt. 64, a growth of connective tissue surrounding the bile-ducts, with recent medullary cancer. From the history he thinks it was originally set up by the pressure of a gall-stone, and records the case as an occurrence of cancerous new growth in consequence of local irritation.

Leared, "Dropsy of the Gall-bladder and Cancer of the Duodenum and Lung," 'Path. Soc. Trans.,' xix, 251; Ogle, "Carcinoma of the Liver; Œdema and Gangrene of one Lower Extremity; Plugging of the Veins of the Limb," 'Lancet,' 1870, i, 82; Benson, "Primary Cancer of the Liver," 'Med. Press and Circ.,' 1869, i, 248; Cryan, "Encephaloid Cancer of the Liver; Atrophy of the Heart," ib., 271; Wardell, "On Carcinoma of the Liver," 'Brit. Med. Journ.,' 1869, i, 464.

(*f*) *Echinococci.*—It is impossible to do more than refer to the following papers:—

Kappeler, "Two Cases of Multilocular Echinococcus," 'Arch. d. Heilk.,' x, 400; Fiedler, "Echinococcus Hepatis," 'Deut. Arch.,' vi, 607; Bohn, "Echinococcus Hepatis bei einem 8 jahr. Knaben, nach etwa 3 jahr. Beobachtung mittelst Durchbruch in den Darmkanal heilend," 'Jahrb. f. Kinderheilk.,' ii, 220; Boyron, "Recherches sur les Kystes hydatiques développés chez l'homme dans le tissu musculaire et intermusculaire," 'Gaz. des Hôp.,' 1870, 157, &c.; Holden, "Hydatids passed by the Intestines," 'Brit. Med. Journ.,' 1869, ii, 27; Heaton, "Case of Hydatid Cyst of the Liver treated successfully by Evacuation only," ib., i, 309; Kelly, "On the Spontaneous Cure of Hydatid Cysts," ib., 387; Sympson, "Cases of Hydatid Cyst in Liver," ib., 1870, i, 437; Southey, "Hydatid Tumour of Liver," ib., ii, 138; Simpson, "Hydatid of the Liver," ib., 440; Fagge and Durham, "On the Electrolytic Treatment of Hydatid Tumours of the Liver," ib., 564; Duffin, "Hydatid Tumour of the Liver treated by simple Puncture," 'Lancet,' 1869, i, 158; Sieveking, "A Case of Hydatid Cyst of the Liver; suppuration; evacuation of pus and hydatids; exhaustion; death," ib., 636; Ward, "Hydatid Disease of the Liver," ib., 1870, i, 476; Murchison, "Case of Hydatids of Liver," ib., ii, 45; Anstie, "Case of Hydatids of the Liver," ib., 215; Murchison, "Large Hydatid Tumour of the Liver opening into the common Bile-duct," 'Path. Soc. Trans.,' xix, 257; Pick, "Hæmatoidin from Hydatid Cyst of Liver," ib., xx, 216; Morgan gives the case of a girl, æt. 7, in whom hydatid cysts were found in the brain, lungs, and liver, 'Brit. Med. Journ.,' 1870, i, 627.

The following refer to other affections of the liver and bile-ducts.

Fräntzel, "Ein Fall von Pylephlebitis nebst diagnostichen Bemerkungen," 'Berl. klin. Woch.,' 1869, 3; Vinay, "Observations d'Ictère généralisé tenant à la présence de Lombrics dans les Voies biliaires," 'Lyon Méd.,' 1869, i, 251; Aubert, "Calculs biliaires," ib., 556; Edinburgh Committee on the Action of Mercury, 'Brit. Med. Journ.,' 1869, i, 417; Payne, "Supposed Syphilitic Tumours of Liver," ib., 1870, i, 399; Morris, "Syphilitic Disease of Liver," ib., ib.; Embleton, "Shoulder-tip Pain in Disease of the Liver," ib., ii, 299, &c.; Wardell, "Small Fatty Growth obstructing Cystic and Common Ducts," 'Lancet,' 1869, ii, 407; Leared, "Remarks on the Pain caused by Gall-stones," 'Med. Press and Circ.,' 1869, i, 1; McSwiney, "A Case of Death resulting from the action of a Gall-stone in its transit from the Gall-bladder," ib., 229; and on Gall-stones cf. Fagge, 'Path. Soc. Trans.,' xix, 254; Murchison, ib., 259, 260; xx, 217, 219.

Affections of the Spleen.

Fagge ('Guy's Hosp. Rep.,' 1869, 205) publishes seven cases of

splenic tumours. The first was that of a boy, one year and eight months old, who during life had presented abundant purpuric spots on the skin, and had gradually wasted; post-mortem the spleen was found, as diagnosed, curved upon itself, so that its anterior notched border looked upwards, and its inferior extremity projected across the abdomen to the right below the umbilicus. The blood from the hepatic vein contained a very marked increase in white cells. The child's twin brother was stated to have died of a similar disease. The second case was one of enlarged spleen from intermittent fever, in a man, æt. 25, without increase of white cells, the enlargement rapidly decreasing under large doses of quinine. The other cases consist of four of enlarged spleen with leucocythæmia, in two men, æt. 36 and 15, and two women, æt. 34 and 40; another case of hydatid tumour in a man, æt. 38. Diagrams of the splenic dulness in the last six cases, and a drawing as well of the general form of the tumour in the seventh during life, are given with the text. They seem to show, as the author points out, that the spleen, when enlarged, generally, though not, of course, in the case of abscess or hydatid tumour, has a tendency to curve into the hypogastric and right iliac region, and he directs attention to the fact that an enlarged spleen may be taken for an ovarian tumour.

A case is quoted ('Gaz. Méd. de Paris,' 1869, 131) from Traube and Cohnheim, of sudden death from rupture of a series of enormously dilated veins of the spleen. The latter was enlarged and remained six inches in length by five in breadth and two in thickness. There were also a few similar varices in the right lobe of the liver connected with the portal vein.

Balfour and Grainger Stewart publish ('Edinb. Med. Journ.,' xiv, 589) a remarkable case of ascites, with enlarged spleen and contracted liver. The portal vein was atheromatous and varicose. The splenic vein was also atheromatous, and presented several true aneurisms, some as large as pigeons' eggs. The spleen itself appears to have been healthy, excepting the dilatation of its vessels. There was extensive secondary thrombosis of the portal vein.

Stein ' (Virch. Arch.,' xlix, 136) found an enormous blood-cyst in the abdomen of a man, æt. 44, connected with the spleen, which was small and atrophied, as also was the left kidney from its pressure. The cyst contained four to five quarts of liquid blood. It originated probably in rupture of, and gradual hæmorrhage from the spleen, some years before.

Moxon ('Trans. Path. Soc., xix, 155) records the case of a man in whom, after death, the stomach and alimentary canal were found full of clotted blood, which had come from the splenic artery. The latter had been opened by a foul, sloughy cancer. No clot was discovered at the opening, but there was a patch in the spleen, with the usual appearance resulting from embolism, and a plug of pale fibrine in the arterial vessel feeding this part of the organ.

Duroziez ('Gaz. des Hôp.,' 1870, 386) gives the following case of hydatid of the spleen, voided, during life, by the bronchi. A man, æt. 31, was admitted into hospital Oct. 8, 1850, with left hemiplegia and mitral insufficiency. During his stay he spat up the débris of a

substance resembling boiled white of egg, which, placed in water, was evidently made up of a number of conjoined layers, without any appearance of organization, evidently the débris of an hydatid cyst. At the autopsy, in addition to the other changes, such as marked narrowing of the mitral orifice, the spleen was found to be hollowed out into a vast cavity, containing a thick, dark coloured fluid, with darkish-brown flocculi. The walls of the cavity were made up partly by the pancreas, the cellular tissue surrounding the kidney, and the gastro-splenic epiploon. The lower lobe of the left lung was closely adherent to the diaphragm, but no trace of any perforation by which the cyst must have emptied itself into the bronchi could be found.

Wilde ('Deut. Archiv,' viii, 116) also gives a case of hydatid tumour of the spleen in a girl, æt. 11, which was tapped. The tumour reached three fingers' breadth to the right of the linea alba, and from a point in the latter, half way between the umbilicus and pubis, to another half way between the former and the ensiform process (17 cm.).

Guyot ('Gaz. des Hôp.,' 1870, 369) records a case of fibro-cartilaginous myxoma of the capsule of the spleen, in a man, æt. 44. The patient had had intermittent fever in Africa at the age of 23, and typhoid, from which he recovered very slowly ten years later. On admission there was a swelling in the left hypochondrium, which had rapidly increased during the six months since it was first observed. After death the tumour was found adherent to the neighbouring organs, of a greyish-yellow colour and gelatinous consistence. On cutting deeply into it the spleen was seen of normal colour, slightly softened, and covered by some remains of its capsule, enclosed in the gelatinous tissue like a nut in its shell (enchatonnée). Under the microscope the elements of the tumour were found to consist of a thick resisting fibrous network, enclosing mucus or mucous tissue, and fusiform and stellated cells, some of them anastomosing. From the superabundance of mucin, the presence of fibrous tissue, and cartilaginous elements, Guyot looks upon it as a growth of the above description.

A few other cases, of no special interest, may be found in the 'Path. Soc. Trans.,' xix—xxi.

Affections of the Pancreas.

Cameron ('Med. Times and Gaz.,' 1869, ii, 491) gives a case of schirrhus of the pancreas in a man, æt. 44. The gland was five times its normal size, and consisted of a hard cancerous mass, firmly adherent to the stomach. The latter was invaded posteriorly and inferiorly, and different parts of the intestine as well.

Hamilton ('Brit. Med. Journ.,' 1870, i, 349) showed to the Dublin Pathological Society the pancreas from a man, æt. 56. The head of the organ was one mass of schirrhus; its duct was dilated and varicose. The tumour formed by the cancerous growth pressed on this duct, the common bile-duct, and the superior mesenteric vein. The affection was confined to the pancreas.

Rigal, "Hypertrophie du Pancréas ayant produit une Compression de la Veine-cave

inférieure et des Canaux biliaires; Dégénération graisseuse du foie, des reins, et du pancréas; Ictère grave; mort et autopsie," 'Gaz. des Hôp.,' 1869, 562.

Affections of the Peritoneum.

Fayrer, "Local Peritonitis and Death resulting from a Kick in the Epigastrium," 'Med. Times and Gaz.,' 1869, ii, 3; Rees, O., "Case of Chronic Ulcer of the Stomach leading to Cancerous Disease of the Peritoneum and Ascites, with Obstruction of Rectum by a sharp bend in its course," ib., i, 436; Althaus, "Idiopathic general Peritonitis in a Child; death on the third day; autopsy," 'Brit. Med. Journ.,' 1870, i, 547; Bristowe, "Peritoneal Cancer," ib., ii, 144; Arnott, "Spindle-celled Sarcomatous Tumour in the Mesentery, with Syphilitic Tumours elsewhere," 'Path. Soc. Trans.,' xx, 221; Wells, Spencer, "Fatty Tumour of Mesentery removed during Life," ib., xix, 243; Cooper Forster, "Fibro-fatty Tumour of the Abdomen, weighing 55 pounds," ib., 246; Gordon, "Fatal Peritonitis induced by a Worm," 'Lancet,' 1870, i, 191; Vallin, "De l'Inflammation périombilicale dans la Tuberculisation du Péritoine," 'Arch. Gén. de Méd.,' 1869, i, 558; Robert, "Péritonite tuberculeuse, Inflammation péri-ombilicale et Perforation intestinale," 'Rec. de Mém. de Méd. Milit.,' xxiii, 419; Scherenberg, "Enorme Echinococcus des Netzes" (in the great omentum of a woman, æt. 23, apparently not above a year's growth; she was tapped for ovarian tumour, and died nearly seven weeks later from exhaustion), "Virch. Arch.,' xlvi, 392; Demarquay, "Arrêt du Testicule droit dans le Canal inguinal, où il reste fixé par une bride épiploïque derrière laquelle une anse intestinale est venue s'étrangler, d'où péritonite et mort," 'Gaz. des Hôp.,' 1869, 351; Mollière, "Observation de Péritonite consécutive à une Injection vaginale," 'Lyon Méd.,' 1869, i, 253.

Reincke ('Virch. Arch.,' li, 391) publishes two fatal cases of abdominal cancer in which paracentesis was employed. In both there was primary disease of the ovaries, with secondary affection of the peritoneum and mesenteric glands. The new growths were separated from the peritoneum by a margin of healthy tissue. He considers that there was here simple extension of the mischief in the track of the trocar, a direct proof that the infecting elements may be conveyed to a given place. This would decide experiments on the conveyance of infection to parts of the body removed from one another, and contagion from one individual to another. He looks forward to further opportunities for observations of the same kind.

Barck ('Deut. Arch.,' vii, 614) gives a case of an echinococcus-cyst occurring in the abdominal wall in a girl, æt. 23. The cyst suppurated and opened spontaneously; the opening was enlarged, and the cyst removed later. Other brood-cells, which had probably escaped during the operation, came away for several days afterwards from the wound.

F. *Diseases of the Kidneys.*

Leube ("Ueber den Antagonismus zwischen Harn- und Schweisssecretion und dessen therapeutische Bedeutung," 'Deut. Arch.,' vii, 1) attempts to place the long-acknowledged and practical value of energetic diaphoresis in chronic kidney diseases, upon a physiological basis. He proves from experiments that on the days on which sweating was artificially caused by baths the excretion of urea by the kidneys was diminished, but its deficiency there almost covered by its increased amount in the sweat. He argues that, consequently, by forwarding the function of the skin, a vicarious organ may be used to lighten that of an

affected one. He recommends energetic diaphoresis in uræmic attacks, as removing from the body the useless and hurtful products of consumption. In conclusion, he shows by tables that sweating is greater in the morning than in the evening, and therefore recommends the use of the bath during the former. He gives in full the case of a man, æt. 45, who died from nephritis and pyelitis, and on whose face and forehead crystals of urea were seen a day or two before death.

In reference to this secretion of urea by the skin, recognised up to the present time only, and that not often, in cholera, Kaup and Jürgensen (ib., vi, 55) give full reports of two cases in which it was present. In the first, a man, æt. 40, the crystals of urea appeared on the day of death over the whole body, but more especially on the forehead, cheeks, and chin. The autopsy showed granular kidneys. In the second case, observed fourteen years later, the same appearance of urea crystals was seen two days before death in a man, æt. 57, suffering from caries of the lumbar vertebræ, &c. After death the heart, kidneys, &c., were normal; the walls of the bladder were enormously thickened. The authors discuss at length the reason of the excretion by the skin of the urea.

Deininger (ib., vii, 587) publishes the case of a boy, æt. 5½ years, who had had scarlet fever, and was attacked at the end of the second week with nephritis and suppression of urine (anuria), lasting eight days. On his skin, also, crystals of urea were found. While the cases recorded by Jürgensen and Leube were fatal, this patient recovered. Considering the vicarious action of the skin proved, he also recommends diaphoretic measures in all cases of diminished or abolished secretion of urine.

Bence Jones ('St. Georg. Hosp. Rep.,' 1869, 1) sums up our present knowledge on the action of acids and alkalies. The latter promote absorption of deposits of urates, fatty and fibrinoïd matters; the former dissolve albuminous food in the stomach, and (?) phosphates in the urine. Acids, both mineral and vegetable, lessen heat (temperature) probably by retarding oxidation, which is promoted by alkalies. By experiments he found that lemon-juice affects only slightly the real diurnal variations of the acidity of the urine, and that even three drachms daily of dilute sulphuric acid affected its alkalinity less than the ordinary process of digestion did.

Thudichum ('Rep. Off. Priv. Counc. for 1869,' p. 270, &c.) gives a method for the determination of the amount of uric acid in urine, which is said to give most satisfactory results.

Owen Rees ("On the early Indications of Nephritic Irritation," 'Guy's Hosp. Rep.,' xiv, 431) calls attention to the method of testing urine by means of tincture of galls for extractives of the blood, as most valuable for the detection of approaching albuminuria, and gives shortly three typical cases which occurred in his practice.

Gilewski ('Wien. Med. Woch.,' 1869, No. 60), on the connection between hypertrophy of the heart and Bright's disease, considers that it has been long demonstrated that Traube's view is wrong. He holds that neurosis probably occurs in the course of the affection, essentially of an excito-motor nature. In this way there might be long-continued embarrassment of the heart, leading gradually to hypertrophy.

Steven ('Glasg. Med. Journ.,' 1869, 257) contributes a case of pyelitis and pyonephrosis in a man, æt. 37, who had suffered from frequent desire to micturate, pain during and after the act, at the end of the penis and in the loins, with gradual emaciation and weakness. The urine deposited pus-corpuscles. Later there appeared a tumour on the right side of the abdomen, painful, elastic, and fluctuating. After death from exhaustion and subacute peritonitis the right side of the abdomen was found occupied by a large sac—the dilated kidney—extending from the right hypochondrium into the pelvic cavity. Some traces of the kidney-substance could be made out near the origin of the ureter. There was no sign of calculus. The left kidney was apparently healthy.

McDowall ('Edin. Med. Journ.,' xv, 1093) publishes a case of tuberculosis (scrofulous pyelitis) of both kidneys, with tubercular disease of the lungs, occurring in an insane patient. The only symptom till shortly before death was a single attack of hæmaturia. The portion of the glands not diseased had become hypertrophied.

Thudichum ('Rep. Off. Privy Council for 1868,' p. 157) gives a short account of intermittent hæmaturia, inclining to the view held by Greenhow, Pavy, Murchison, &c., against other authors, that it is probably not malarious. It is not periodical, and requires, apparently, a fresh exposure to cold or damp to excite each separate paroxysm. No post-mortem examination has been made of any case. From chemical and spectroscopic analysis he concludes that the urine in this affection contains hæmato-crystallin and hæmatin in solution, and also the latter as an amorphous sediment. That some acid, probably acetic, is produced in the kidney (?), which makes the urine abnormally acid and dissolves hæmatin. The presence of acetic acid or oxalate of lime is no great anomaly. He suggests the word Cruenturesis instead of hæmaturia or hæmatinuria.

Duckworth ('Brit. Med. Journ.,' 1869, i, 562) gives the case of a man, æt. 30, of a generally relaxed atonic habit, in whom hæmaturia occurred with a certain periodicity, as a consequence of oxaluria. There were no symptoms of calculus, and the urinary disturbance disappeared under the use of nitro-muriatic acid.

Schiff ('New York Med. Journ.,' March, 1869) and Heslop ('Brit. Med. Journ.,' 1869, i, 541) each give a case in which both kidneys were movable, in two women of 26 and 38 years. Fleming (ib., ii, 211) gives two cases of movable right kidney, both also in women; while Goutier ('Union Méd.,' viii, 468) records the case of a woman, æt. 29, in whom there was irreducible dislocation, with great pain, of the right kidney, which appeared as a tumour in the hypochondrium to the right of the umbilicus.

Heller ('Deut. Arch.,' vi, 276), who had already given (ib., v, 367) a case of hydronephrosis of one half of the kidney, with double pelvis and ureter, in which there was congenital obstruction of one of the latter, contributes another of the same kind. It occurred in a man of weak intellect, æt. 69, in whom the right kidney presented, at its upper half, a sac filled with clear serum.

Brückner ('Virch. Arch.,' xlvi, 503) records two cases of congenital hydronephrosis in children born of the same mother; and Virchow, in

his remarks on them (ib., 506), states that he found it to depend, in both, on a dilatation of the urinary tubules.

Hillier gives the autopsy ('Med.-Chir. Trans.,' 1869, p. 389) of a case of hydronephrosis, the history of which he had already published (ib., 1865, 73), in a boy who died at the age of seven years. The obstruction was found to be due to a congenital stricture of the right ureter.

Edlefsen, "Beiträge zur Kenntniss der Eiweisstoffe des Harns," 'Deut. Arch.,' vii, 67; Johnson, "Hypertrophy of the Muscular Walls of the Minute Arteries in cases of Chronic Bright's Disease," 'Brit. Med. Journ.,' 1870, i, 381; Matton, "Albuminurie avec Anasarque," 'Gaz. des Hôp.,' 1869, 94; Andrews, "Clinical Cases: Case 2, Bright's Disease," 'Amer. Journ. of Insanity,' 1869, xxv, 362; McNutt, "On the Therapeutical Value of Sambucus Canadensis in Albuminuria," 'Amer. Journ. Med. Sci.,' lviii, 47; Johnson, "On the Treatment of Acute and Chronic Bright's Disease," 'Brit. Med. Journ.,' 1870, ii, 135; Mackey, "On the Value of Tincture of Cantharides in some forms of Pyelitis," ib., 1869, i, 587; Ellis, "Primary Tubercle of Left Kidney; pyonephritis," ib., ii, 324; Tachard, "Abcès Périnéphrétique consécutif à une Cystite chronique," 'Gaz. des Hôp.,' 1869, 130; Paulicki, "Tuberculosis of the Left Kidney, &c.," 'Wien. Med. Woch.,' 1869, No. 49; Little, "Amyloid Disease of Liver and Kidneys," 'Med. Press and Circ.,' 1869, i, 331; Hutchinson (Philadelphia), "Albuminoid Degeneration of Kidneys," 'Amer. Journ. Med. Sci.,' liv, 127; Harley, "A Second Communication on the Epidemic Hæmaturia of the Cape of Good Hope and Natal," 'Med.-Chir. Trans.,' 1869, 379; Whipham, "Case in which the Kidney was transformed into Fat," 'Path. Soc. Trans.,' xix, 261; Wilks, "Fibrous Tumour of the Kidney," ib., xx, 224; Duckworth, "Single Kidney with Compensatory Enlargement," ib., 232; Herz, "Hochgradige Atrophie der linken Niere in Folge von angeborner Verengerung der linken Arteria renalis," 'Virch. Arch.,' xlvi, 233; Taylor, "Case of Fatal Injury to the Kidney in a subject possessing only one Kidney," 'Brit. Med. Journ.,' 1870, ii, 485; Roberts, "On Movable Kidneys," ib., i, 1; Hickinbotham, "Abscess occurring in a Movable Kidney," ib., ii, 691; Thompson, "Cases of Cirrhosis of the Kidney in Young People," ib., ii, 484; Kjellberg, "Ueber das Vorkommen der Parenchymatösen Nephritis im frühen Kindesalter, als Komplikation bei anderen Krankheiten, mit besonderer Rücksicht auf ihr Auftreten bein Darmkatarrh," 'Journ. f. Kinderk.,' 1870, liv, 192.

Hydatid Cyst of the Supra-renal Bodies.

As a matter of curiosity may be given here a case recorded by Huber ('Deut. Arch.,' iv, 614) of echinococcus multilocularis of the right supra-renal body, in a man, æt. 62, to which he calls further attention (ib., vi, 139). He knows only of one other case, quoted from Perrin by Davaine ('Traité des Entozoares,' p. 512), and a doubtful* one recorded by Risdon Bennett, and quoted by Virchow ('Geschwülste,' B. iii, s. 92).

G. *Diseases of the Skin.*

Colson ('Gaz. des Hôp.,' 1869, 89) employs vulcanized india-rubber in "dartrous" diseases, as a simple compress applied to the affected parts, and covered with a roller bandage, or used as a cap to the head, a glove to the hand, &c. The great thing is to prevent the entrance of air, and to keep the part continually moist. Its first effect is to cause

* In this case ('Path. Soc. Trans.,' xv, 224) a sac of the size of a small orange occupied the place of the left supra-renal body, of which scarcely a trace could be found. No echinococci or débris could be discovered, and the diagnosis rests upon the "characteristic elasticity of the cyst and its beautiful lamellated structure, as seen under the microscope." Virchow (l. c., 93) is inclined to place it rather among the cystic strumas (cystiche Strumen).—A. B. S.

falling off the scabs and crusts; it relieves the tension and heat of skin. He used it principally in the severe forms of eczema, the result being the same whatever the seat of the malady. Under its employment he finds that acute eczema does not last longer than a month or six weeks. He recommends it also in impetigo of the head in children; still more in impetigo barbæ, in pityriasis, in the headaches caused by chill in persons attacked with pityriasis capitis; in general inveterate psoriasis, and in pruritus of the vulva.

Lipp ('Arch. f. Derm. und Syph.,' i, 326) publishes two cases of psoriasis and one of eczema cured by the hypodermic injection of arsenious acid. It was successful in the former after Fowler's solution had failed; in the latter other means were used as well. Eight grains of the acid were injected in the first case of psoriasis in forty-eight days, and four grains in the second in thirty-eight days. After giving details of the phenomena observed after injection, he observes that the balance in favour of injection as against internal administration consists in the certainty of absorption, the absence of impaired digestion, the smallness of the doses, and the short duration of the treatment.

Neumann (ib., 424), in an article on the effects of carbolic acid on the economy of vegetable parasites and diseases of the skin, gives the results of experiments made on animals and plants. He concludes that it acts as an energetic poison directly upon the nervous system. Its effect is thrice as rapid when injected under the skin than when taken into the stomach. It is useful in scaly affections, and especially in their early stage. It may be employed as a caustic in chronic inflammations and in parasitic diseases. It arrests the germinating process in the lower vegetable organisms, though for this purpose solutions stronger than ordinarily recommended must be employed (1 in 300 or 500 instead of 1 in 1000).

Ranvier ('Gaz. Méd. de Paris,' 1869, 314) holds that desquamation of the skin depends neither on excessive or rapid production of cells, but on a certain mode of nutrition originating in the mucous cells of Malpighi (état muqueux), the latter being persistent instead of becoming horny and adherent. He asserts that just before desquamation he has always found the nucleolus of the cells in the rete Malpighii dilated so as to form a vesicle which touches one part of the circumference of the nucleus (at Balbiani's canal?). This "mucous condition" may occur without desquamation in a greater or less number of the cells in plaques muqueuses.

Baudot, 'Traité des Affections de la Peau; d'après les Doctrines de Bazin,' Paris; Damon, "The Neuroses of the Skin, their Pathology and Treatment," Philadelphia, 1868, pp. 114; Id., "The Structural Lesions of the Skin, &c.," ib., pp. 255; Hardy, "Cours Clinique des Maladies de la Peau; première leçon," 'Ann. de Dermatol.,' i, 475.

Erythema.—Hutchinson ('Med. Times and Gaz.,' 1869, i, 352) records a case of erythema nodosum in a boy, æt. 12, and suggests that the ascertained facts connected with the affection agrees better with the characters of the exanthems than with any other group of diseases, in that it has fixed stages, which are transitory, uninfluenced by treatment,

preceded and attended by fever; that it observes closely one type, attacking by preference the young, producing a symmetrical rash, and occurring but once in life. He remarks, further, that "abortive exanthems"—cases in which (this? and) the exanthemata are so mild as to produce no rash—are very common, instancing more especially cases of constitutional syphilis; and, lastly, that attention should be directed to the following questions:

1. Does erythema nodosum occur twice in the same individual?

2. Are there any instances of apparent contagion, or of its simultaneous occurrence in several members of the same family?

3. When it is present in one member of a family, is it ever noticed that the other children are out of sorts, although showing no spots?

Lailler ('Gaz. des Hôp.,' 1869, p. 50) gives the case of a man, æt. 47, twice affected with erythema solare (ab insolatione) of the hands, with an interval of nine months, who died later of delirium tremens. He and Bazin considered the occurrence of the cerebral symptoms to be only a coincidence, while Hardy regarded it as a case of érythème pellagreux, even before the appearance of the latter.

Perroud ("Note sur les Tumeurs éphémères congestive de la Peau," 'Ann. de Derm. et Syph.,' 1869, i, 193) describes, under this title, certain localised tumours of a congestive rather than inflammatory nature, characterised especially by the rapidity of their evolution, preceded or attended by a slight feeling of smarting, tickling, or tension, on some part of the cutaneous surface, generally the face, reaching, under the eyes of the observer, the size of a nut, a hen's or even a turkey's egg, resistent, warm, of a pale red, if of any colour, attended, to the patient, with a feeling of heat and pulsation, but without fever or any general malaise, lasting only a few hours, perhaps only a few minutes, appearing and disappearing in the same rapid manner. This round of phenomena may occur several times a day, at the same part or at different ones, for a period of several weeks or months. In the absence of suppuration and ulceration, and in their chronic reproduction, these tumours resemble erythema nodosum; but Perroud thinks these are sufficient differences to make two allied but distinct affections. For instance, the absence of prodromic symptoms, fever, or rheumatoid pains in the joints, and of marked coloration. The predilection of these tumours for the face, though they may attack all points, their disappearance without any trace of their former existence or without the ecchymoses so usually left behind by erythema nodosum, seem to separate them from the latter. And they do not, like the last, appear to be exclusively allied to rheumatism or dysmenorrhœa. After recounting two cases related by Graves ('Clin. Lect.,' i, 461, 463), he gives five observed by himself: in a woman of lymphatic habits; a man, æt. 44, suffering from gastric disturbance, who had had acute articular rheumatism; a scrofulous woman, æt. 32, on the fortieth day after her second confinement; and two other women, aged respectively 27 and 32, suffering from dysmenorrhœa and neuralgia.*

* It may be well to compare with the author's remark about E. nodosum the fact that three of these five cases were combined with rheumatism and dysmenorrhœa; in

In a report on hydroa and allied diseases ('Brit. Med. Journ.,' 1870, i, 490 and 546, ii, 86 and 702) attention is drawn to certain curious cases of constitutional disturbance, accompanied by a skin eruption, to which Bazin recently gave this name. Its closer relationship seems to be with the special forms of erythema and urticaria. Like them, it usually, though by no means always, has a definite duration, and disappears spontaneously; but it differs from them in that its eruption is attended with the development of vesicles, or even small bullæ; and it is the risk of mistaking it, on the one hand, for variola or varicella, and, on the other, and more especially, for syphilis, that the practical importance of recognising it lies. From eczema and pemphigus it is distinguished as well by other points in its clinical history, as by its being *always* symmetrical, never allowing the back of the hands, and scarcely ever the face, to escape. It is essentially a form of Hebra's erythema multiforme. The history of eighteen cases is given, including four of Bazin's, and at p. 702 are tabulated for comparison.

Wardell, "Erythema Circinatum," 'Lancet,' 1870, ii, 333; Bell, "Erythema Multiforme covering nearly the whole surface of the Body, and passing into Herpes," ib., 633.

Urticaria.—Martin ('Gaz. des Hôp.,' 1869, p. 259) read before the Société de Médecine de Paris a paper on "Spontaneous Urticaria." A man, æt. 52, suffered from contusion of the lumbar region, from an accident, with slight excoriation and ecchymosis. Cupping, followed by linseed-meal poultices, was the treatment adopted. A quarter of an hour later his right eye was suddenly attacked with itching and smarting, succeeded by great swelling and redness of the lids. The lower lip, palate, face, and left eye, were next attacked, though more slightly; then the hands, head, breast, loins, and, lastly, the whole body. With this occurred attacks of syncope, cough, pyrosis, and tenesmus. After discussing the probable causes of the eruption, the author decides in favour of the poultices, which he alleges were made of stale and rancid linseed-meal.

Nettleship, Vialls, Waren Tay, "Rare Forms of Urticaria," 'Brit. Med. Journ.,' 1869, ii, 323.

Eczema.—Schwimmer ('Wien. Med. Woch.,' 1869, p. 1664) gives two cases of eczema erythematosum (Erasmus Wilson), in which occurred a red, isolated, and confluent eruption, with smooth surface, and trifling desquamation here and there. They were chronic in their course and accompanied with itching.

Fox ('Lancet,' 1870, ii, 184) records an unusual form of eczema labialis, occurring in two men, and caused, according to their account, by cold. It consisted of an oval, elastic, tender swelling, extending half an inch laterally from side to side of the frænum of the nose, and from above downwards to near the junction of the mucous membrane and the skin. It was produced by an inflammation of the hair-follicles, implicating the fibrous tissue round about to a greater extent than usual. There was no free crusting, as in impetigo labialis, nor was the

the case of the rheumatic patient the affection seems, in many particulars, to resemble urticaria.—A. B. S.

aspect so pustular as in non-parasitic sycosis. He urges the importance of avoiding irritating applications at the commencement of the affection, and recommends litharge to exclude the air, hot fomentations, alkalies, and tonics, subsequent strapping with lead or mercurial plaster, and the use in the chronic stage of iodine.

Milton, "On the Nature and Classification of Ekzema," 'Journ. of Cut. Med.,' iii, 140; Wilson, E., "On Ekzema;" Id., "Natural History of Ekzema: E. infantile," ib., 396; Id., "Dermatitis Toxica from the Aniline Dye," ib., 44; Purdon, "Notes on Eczema," 'Brit. Med. Journ.,' 1869, ii, 29; Fox, "Eczema, its Nature and Treatment," London, 1870; Sutton, "Tetanus apparently excited by an Eczematous Eruption on the Hand," 'Brit. Med. Journ.,' 1870, ii, 8.

Herpes.—Broadbent ("Speculations concerning Herpes Zoster," 'Med. Times and Gaz.,' 1869, i, 33), in reference to a former paper of Hutchinson's (ib., 1868, Dec.), opposes the views of the latter as to its alliance with the acute exanthemata, which rest upon the non-occurrence of this affection, its fixed stages and definite duration. He also rejects the view that the root of the nerve is the seat of irritation, and finds it rather in "the branches of distribution of the nerve extending from various points in different cases to the periphery."

Hutchinson (ib., 407) gives eight more cases of *herpes zoster* which he thinks were probably produced by arsenic. Seven of these had been taking the drug for some other skin disease; one of them, a boy, under Mr. Lawrence, at St. Bartholomew's, had been taking arsenic, and had shingles, but the connection between the two is not certain. The eighth, a girl, had been taking arsenic for chorea. Two other cases are given, one of herpes præputialis, and the other of herpes labialis in patients taking the same drug for psoriasis and eczema; and two others who had shingles without having taken arsenic.

Fox ('Brit. Med. Journ.,' 1870, 139) records the case of a man, æt. 33, in whom *herpes zoster* had occurred three years running; another, among the few recorded instances, against the common opinion that the affection occurs but once in a lifetime.

Auspitz ('Arch. f. Derm.,' i, 246) contributes two cases of *herpes vegetans*. The first occurred in a woman, æt. 28, who consulted him for onychogryphosis of all her fingers and syphilitic psoriasis of her hands. In the eighth month of pregnancy she was attacked with a sort of eczema of the skin of the abdomen. According to the medical attendant, new groups of vesicles appeared in succession, became pustular, covered with crusts, and gave the appearance of papillary growths (fleischwärzchenartigen Wucherung). The death of the fœtus soon after was followed by that of the mother from acute œdema of the lung. No autopsy was allowed. The second case also happened in a married woman, æt. 26, in the sixth month of pregnancy, the mother of a rachitic child aged two years. No history of syphilis could be obtained. For a fortnight there had appeared on the left upper arm and on the abdomen vesicles and pustules, singly or grouped in circles on a red base. Over both inguinal regions on the lower part and whole posterior surface of the thigh red, moist patches appeared, and spread as detailed at length to other parts, developing into vegetations exactly like true condylomata. After several attacks

of eclampsia she was delivered of a dead child, which showed no trace of any eruption. Nine days later she died of peritonitis. A summary of the autopsy is given. As characteristic of both cases, and especially the second, Auspitz gives (1) the eruption of vesicles and pustules in groups, with eczematous infiltration of the interlying skin; (2) the growths resembling condylomata in these places; (3) the development of the eruption during pregnancy in both cases; (4) the fact that one of the patients had had syphilis. The only other cases resembling those which he finds recorded are two by Köbner under the name of "beerschwammähnliche multiple Papillargeschwülste der Haut," one in a woman, the other in a man; one by Alibert in a man, and two also in men by Bazin.

Curgenven, "Cases of Herpes Contagiosus (?)," 'Brit. Med. Journ.,' 1869, ii, 488; Dauvergne, "Du Zona ou Zoster, et de son Traitement par la Pommade de Belladonne," 'Bull. Gén. de Thérap.,' t. 76, p. 170.

Prurigo.—Derby ('Sitzungsber. der Wien. Acad. der Wissensch.,' lix, pt. i, p. 280) gives the results of his investigations into the anatomy of prurigo, from six living cases, and another which terminated fatally from obstinate prurigo followed by chronic eczema. Portions of skin were hardened in chromic acid, and sections coloured with carmine. In one case a solution of silver was injected, to demonstrate the lymphatics. He infers that the papules of prurigo are caused by a morbid condition of the hair and the tissues round it. He gives a very minute description of the appearances observed, and concludes that (1) in prurigo we have to deal with an affection of the hair, in which a protrusion from the outer root-sheath, of varying length, and made up of epithelial cells, penetrates obliquely between the fibres of the *arrector pili*, which are separated by it. (2) That the arrectores pili become hypertrophied, and that, through the increased pressure which they exert upon the hair, the latter takes a more vertical position (goose-skin), and a condition is brought about in which a hernia-like bulging of the inner sheath of the hair-sac and of the outer root-sheath is possible. (3) That in the neighbourhood of the hair thus affected a serous exudation takes place into the corium and papillæ, and appears in the papule as a clear or slightly blood-coloured drop. These observations throw some light upon the reason why prurigo does not occur on hairless places like the hollow of the hand and the sole of the foot, and but rarely in the bends of the extremities, where few hairs only are found. The paper is accompanied by good illustrations of the microscopical appearances observed.

Güntz ('Arch. f. Derm.,' i, 630) rapidly cured three cases of pruritus cutaneus with carbolic acid, which he gave in pills, containing gr. ½, twice a day to a child of fifteen months, and to two adults 5—9 pills a day, each containing a grain. The two latter, a female of 40 and a man of 75, recovered after taking four scruples of the acid in the course of four weeks; the first got well after a fortnight.

Fagge ('Lancet,' 1870, ii, 120) read a paper before the Med. Soc. on the anatomy of a case of molluscum fibrosum, a name which he con-

siders more appropriate than fibroma molluscum. His patient was a woman who died of some other disease. From a microscopical examination of the tumours, he concludes—(1) That each tumour is originally developed round a hair-follicle, enclosing at the same time the sebaceous glands belonging to the latter. (2) That the smallest tumours consist of two distinct elements—a central glandular body, itself surrounding a hair; and a peripheral mass of very fine connective tissue, containing numerous minute oval nuclei. (3) That the glandular body is a sebaceous gland, enlarged by the separation of its sacculi from one another, and perhaps also by the actual multiplication and increase in size of the sacculi themselves. (4) That the peripheral mass of nucleated connective tissue is developed from the two external layers of the dermal coat of the hair-follicle and sebaceous glands.

Murchison ('Path. Soc. Trans.,' xx, 187) gives the autopsy of a case of vitiligoidea associated with chronic jaundice and enlargement of the liver in a man, æt. 41. Sections of the cream-coloured patches in the eyelids showed that the colour was due to the deposit of numerous oil-granules in the meshes of the cutis, most abundant in the neighbourhood of the hair-follicles, which were otherwise normal. On staining with carmine, a nucleus could be seen in the centre of the oily masses. The cells of the epidermis were normal. The liver was large, weighing 80¾ oz.; its surface was smooth; its capsule thickened and covered with old adhesions. It was very firm, smooth, and dense on section, with greatly increased fibroid tissue and atrophied secreting substance. Groups of rounded nuclei, or bodies resembling lymphoid corpuscles, were aggregated round the minute vessels between the lobules. The spleen weighed 23 oz., and it and the kidneys contained embolic masses.

Cases of feigned cutaneous affections are given by Startin ('Brit. Med. Journ.,' 1870; i, 25) and Fagge (ib., 151); Wilson, E. "On Prurigo," 'Med. Times and Gaz.,' 1869, ii, 681; Picot, "Herpes Zoster treated by Continuous Current," 'Gaz. des Hôp.,' 1870, 383; Chatagnon, "A Case of acute pemphigus," ib., 270; Gee ('St. Bart. Hosp. Rep.,' v, 119) gives a case of Acute Pemphigus in a girl, æt. 4, and prints a curve of the temperature, which shows a certain amount of relation between the eruption and the pyrexia; Hardy, "Pemphigus Aigue Consécutif à l'Administration du Copaïba," 'Gaz. des Hôp.,' 1869, 141; Guibout et Malherbe, "Deux Observations de Pemphigus," 'Union Méd.,' viii, 506; Köbner, "Zur Streitfrage über die Existenz eines Pemphigus Acutus," 'Arch. f. Derm.,' i, 209; Pribram, "Fieberhafter Pemphigus: Tod in der achten Krankheitswoche an Nachfolgender Tuberculose," ib., 468; Steiner, "Klinische Studie über der Pemphigus in Kindersalter," ib., 491; Tenneson, "Éruption d'Anthrax, de Furoncles et d'Ecthyma; Glycosurie provoquée; guérison," 'Union Méd.,' vii, 179; Lailler, "Sur la Nature et le Traitement de l'Ichthyosis," 'Ann. de Derm.,' i, 91; Auspitz, "Ichthyosis Neonatorum," ib., 253; Milton, "Two Cases of Ichthyosis," 'Journ. of Cut. Med.,' iii, 36; Leisrink, "Beitrag zur Lehre von der Scleroderma Adultorum, namentlich in Bezug auf ihre Verwandtschaft zur Elephantiasis Arabum," 'Deut. Klin.,' 1869, 27; Barton, "Case of Scleriasis, with observations," 'Dubl. Journ.,' xlviii, 123; Arnold, "Three Cases of Scleroderma, with remarks," 'Amer. Journ. Med. Sci.,' lviii, 89; Guibout, "De l'Elephantiasis du Nez et de son Traitement," 'Ann. de Derm.,' i, 135; Fayrer, "Hypertrophy of Leg, probably due to Syphilo-elephantoid Disease," 'Med. Times and Gaz.,' 1869, ii, 487; Day, "Enlargement of the Right Lower Limb, &c., in a Child, æt. 7 years," 'Brit. Med. Journ.,' 1869, i, 332; Squire, "Elephantiasis Græcorum," ib., 1870, i, 221; Andrews, "A Case of Elephantiasis Arabum," 'Amer. Journ. Med. Sci.,' lviii, 424; Hulke, "Case of Lipoma Nasi," 'Lancet,' 1869, i, 361; Fischer, "Die Behandlung der Elephantiasis Arabum mittelst Ligatur oder Compression der Hauptarterie," 'Virch. Arch.,' xlvi, 328; Meyer, "Eine seltene Form von Hinbeergeschwulsten," ib., 113; Beigel,

"Papilloma Area-elevatum: a case of Skin Disease not hitherto described," ib., xlviii, 367; and 'Path. Soc. Trans.,' xx, 415; Kohn, "Ueber die sogenannte Frambæsia und mehrere andere Arten von Papillären Neubildungen der Haut," 'Arch. f. Derm.,' i, 382; Wardell, "Lupus Erythematosus," 'Lancet,' 1870, ii, 33; Geddings, "On Lupus Erythematosus," 'Amer. Journ. Med. Sci.,' lviii, 59; Neumann, "Beitrag zur Kenntniss des Lupus Erythem." 'Wien. Med. Woch.,' 1869, No. 68; Fagge, "Two Cases of Vitiligoidea associated with Chronic Jaundice and Enlargement of the Liver," 'Path. Soc. Trans.,' xix, 434; Frank-Smith, "On Xanthoma or Vitiligoidea," 'Journ. Cut. Med.,' iii, 241; Köbner, "Zur Kenntniss der Allgemeinen Sarcomatose und der Hautsarcome im Besondern," 'Arch. f. Derm.,' i, 369; Legouest, "Keloid Tumour," 'Gaz. des Hôp.,' 1869, 583; Schwimmer, "Icthyosis Sebacea; Seborrhœa Universalis," 'Wien. Med. Woch.,' 1869, No. 98; Vogel, "Die Quantitativ Analyse des Hauttalges," 'Deut. Arch.,' v, 522; Ferrand, "Encore une Chromidrose," 'Union Méd.,' viii, 387; Foot, "Two Cases of Chromidrosis," 'Dubl. Journ.,' xlviii, 68; Parrot, "Note sur la Nature de certains cas de Masque, et de quelques autres Colorations anomales de la Peau," 'Gaz. Hebd.,' 1869, No. 8; Thurn, "Ueber die Entstehung des Chloasma," 'Wien. Med. Woch.,' 1869, No. 56; Orsi, "Caso di Antropoleopardalisdermia," 'Gaz. Méd. Ital. Lomb.,' 1869, 401; Hutchinson, "Cases of severe Eruptions from Insect-bites" (Mosquitoes?), 'Brit. Med. Journ.,' 1869, ii, 396; Nettleship, "Notice on the Presence of the Body-louse in Prurigo Senilis," ib., 435; Fox, "A Note on the use of Sulphur in Itch," 'Lancet,' 1869, i, 322; Burchardt, "Ueber Krätze und deren Behandlung," 'Arch. f. Derm.,' i, 180; Hebra, "Ueber den Befund von Pilzen bei Eczema Marginatum," ib., 163; Pick, "Zur Verständigung über das sogenannte Eczema Maginatum Hebreæ," ib., 443; Rindfleisch, "Area Celsi," ib., 483; Wyss, "Alopecia Areata in a Boy, æt. 6, caused (?) by Arsenic," 'Arch. d. Heilk.,' xi, 295; Scherenberg, Two Cases of Area Celsi in a Brother and Sister; the bald parts less sensitive; hair-bulbs wasted; no fungus, 'Virch. Arch.,' xlvi, 493; Pincus, "Ueber Alopecia Areata und Herpes Tonsurans," 'Deut. Klin.,' 1869, 15; Id., "Ein Fall von Alopecia Pityrodes vor Eintritt der Pubertät," 'Berl. Klin. Woch.,' 1869, 341; Fox, "Tinea Circinata," 'Lancet,' 1869, ii, 301.

Syphilis.

There is no space for abstracts of any of the following and other papers.

Wilks, 'A Lecture on Syphilis, delivered at Guy's Hospital, Jan. 11, 1867,' pp. 36; Hill, 'Syphilis and Local Disorders,' London, pp. 505; Barton, 'The Pathology and Treatment of Syphilis, Chancroid Ulcers, and their Complications,' Dublin, pp. 316; Miller, 'Compendium der Geschichte, Pathologie und Therapie der Venerischen Krankheiten,' Erlangen; Boeck, "Ueber Syphilitische Infectionsweisen und die Inoculabilität des Syphilitischen Virus," 'Arch. f. Derm. u. Syph.,' i, 168; Mackenzie, "On Syphilitic Diseases of the Throat," 'Brit. Med. Journ.,' 1869, i, 494; Hill, J. D., "On the Effect of Utero-gestation upon the Treatment and Prognosis of Constitutional Syphilis," 'Med. Times and Gaz.,' 1869, i, 217; Charpentier, "Syphilis héréditaire: Syphilis constitutionelle chèz la mère remontant au sixième mois de la grossesse. Mari affecté de chancres terminés par cicatrisation nette," 'Presse Méd. Belge,' 1869, 62; Michaelis, "Eigenthumlicher Verlauf einzelner Fälle von Syphilis in Alter, welche Verwechslung mit Carcinon möglich machen.," 'Arch. f. Derm.,' i, 355; Sigmund, "Die Syphilis beim Weibe," 'Wien. Med. Woch.,' 1869, No. 25; Després, "Du début de l'infection syphilitique: Étude sur un début commun de la Syphilis chez la femme," 'Arch. Gén. de Méd.,' 1869, i, 1; Fort, "Recherches sur quelques points de l'histoire clinique des Maladies vénériennes," 'Gaz. Hebd.,' 1869, No. 23; Dron, "Cas de Syphilis ayant occasioné la mort," 'Lyon Méd.,' 1869, i, 321; Id., "Propagation de la Syphilis par les Nourrices; mode particulier de transmission de cette maladie par la Nourrice au nourrisson dans l'allaitement," ib., 1870, iv, 512 (and see 'Ann. de Derm. et Syph.,' 1870, ii, 161); Alling, "Deux cas d'œdème syphilitique de la Glotte guéris par le traitement médical seul," 'Union Méd.,' viii, 248; Fournier, "De l'analgésie syphilitique secondaire," 'Ann. de Derm.,' i, 486; Rodet, "Observation pour servir a l'histoire de l'hépatite syphilitique," ib., ii, 81; Laure, "Syphilis viscérale: Autopsie, Gommes du crâne, Perihépatite, Hépatite interstitielle, dégénérescence graisseuse, &c.," 'Lyon. Méd.,' 1869, ii, 389; Fournier, "Syphilitic Gumma fifty-five years after the primary Sore," 'Union Méd.,' 1870, Aug. 9.

REPORT ON SURGERY.

BY

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Anæsthetics. — Mr. Fox writes on the use of nitrous oxide with Coxeter's liquid gas. A bottle containing one hundred gallons of gas in the liquid state is only twelve inches long, three and a quarter inches in diameter, and weighs nine pounds one ounce. Smaller ones are made. ('Lancet,' April 2 and 9, 1870.)

Chloral has been used in a great variety of cases, too numerous to mention here, in order to procure sleep and allay irritation. In one case, under the care of Dr. Noir (of Brionde), amputation of the leg was performed under its influence, but such symptoms were produced as not to be encouraging for the future. The patient was a man aged 64, suffering from a tumour of the leg. As a preliminary measure, a dose of 60 grains was given him at 8 in the morning. In an hour he had defective vision and made frequent attempts at vomiting; after this came violent excitement. He then fell asleep and remained so for an hour and a half. He awoke refreshed and hungry. Two days later 75 grains were given him. He was uncomfortable for two hours, when he fell asleep and underwent amputation without feeling it. After being placed in bed he went into a state of alarming coma for one hour; after which, on waking, he was seized with violent delirium and severe vomiting. After seven hours he passed into a state of extreme prostration, and then recovered his senses; but did not recollect anything of what had passed. The next day all the ill effects had passed off. Dr. Noir remarks that the delirium, prostration, and coma were so alarming that it would be imprudent to use chloral for operations if further experience shows similar symptoms. There could be no doubt that the anæsthesia was complete. (Quoted in the 'Lancet,' Jan. 1, 1870; from 'Gaz. des Hôpitaux,' Dec. 3, 1869.)

A new antiseptic (*chloralum*).—Mr. J. Gamgee has called attention to the advantages which the hydrated chloride of aluminium possesses as a general antiseptic. It is not poisonous like chloride of zinc, not offensive like carbolic acid, does not evolve unpleasant fumes, does not stain like the permanganates, and is more convenient than sulphurous acid. He calls it chloralum. For ordinary disinfecting purposes solutions varying from 1006 to 1010 sp. gr. are quite strong enough. ('Lancet,' 1870, Sept. 3, p. 354, &c.)

Antiseptic treatment. — A clinical lecture, by Mr. Lister, on a case of compound dislocation of the ankle and other injuries, is given in the 'Lancet' of March 19, 26, and April 9. The patient was a man, aged 30, who had been run over by an engine. Mr. Lister remarks that the injury was most serious. "Mr. Syme informs me that at one time, on looking into the hospital records, he found that the last fourteen cases of compound dislocation of the ankle, admitted into the infirmary, had all ended fatally. He therefore came to regard amputation at the ankle as the best treatment in most cases, though he sometimes so far modified his practice as to content himself with removing the end of the tibia, so converting the case into one of excision of the ankle." In the present case, the end of the fibula was snipped off and the dislocation reduced. "Watery solution of carbolic acid, as strong as it can be made (one part of the crystals to twenty of water), was thrown into the joint with a syringe, the edges of the skin being held together to prevent its escape and cause its penetration to all the interstices of the wound; and this was further promoted by free manipulation of the injured part while the fluid was still in the interior." In an operation performed just before (the removal of a fatty tumour) a lotion of half the strength was used (1 to 40), experience having proved that this is sufficient to ensure destruction of the putrefactive organisms in a wound just made, and made by the surgeon himself. Water is the best vehicle, as the antiseptic is required to be powerful for the moment, but transient; that is, in the preliminary treatment. The liquid introduced having been squeezed out, the process of injection and manipulation was repeated, and the skin in the vicinity well washed with the lotion to remove organisms adhering to it or to the hairs. Lac plaster was then wrapped in two layers round the limb, from three to four inches above the wound to as far below—that is to say, extending well up the leg and embracing the heel and instep. A cloth, to absorb the blood and serum which would be discharged from beneath the margins of the plaster, was then bandaged on, and a splint applied to the inner aspect of the leg and foot. "The lac plaster has been much improved of late, by being incorporated with a soft cloth instead of being spread on starched calico. It is thus rendered beautifully flexible, and, at the same time, much more durable, the cloth incorporated with it enabling it to withstand any amount of wear and tear. But, as in this form it is very thin, it is well, where much discharge is anticipated or when a long time is intended to elapse between the dressings, to use it in two layers, so as to double the store of the acid in the application." For sutures "the material which I have lately used is silk steeped for awhile in a mixture of melted bees'-wax with a certain proportion of carbolic acid—say a tenth part. As the silk is taken out of the hot liquid, it is drawn through a dry cloth to remove the superfluous wax; after which it may be wound on a reel and kept in any close vessel. The wax, besides giving the knot a better hold, prevents the antiseptic from being washed out of the thread and, also, filling up the interstices of the fibres, renders the silk incapable of imbibing stimulating liquids; and so confers an unirritating quality corresponding to that of the

metallic suture, over which the suppleness of the thread gives it a great superiority." After stitching a wound up more strong watery solution should be injected. In four other cases of compound dislocation of the ankle recovery with a useful foot has followed the use of the antiseptic treatment. In the present case the dressings were changed entirely on the day after the accident. In doing this the greatest care is requisite. The difficulty and uncertainty formerly attendant on the exclusion of decomposing matters during subsequent dressings has been overcome "by a most simple means—the employment of a syringe, the nozzle of which is inserted beneath the margin of the lac plaster, and, as this is raised, a stream of weak watery solution of carbolic is made to play upon the wound till a piece of calico, soaked in the same lotion, has been placed upon it, by an assistant, as a temporary security, until the plaster is re-applied. Any examination of the wound that may be required is made with freedom through the transparent solution thrown over it by the syringe, the wound being never left for an instant without an antiseptic guard." In all dressings subsequent to the first one, a layer of material, designed to protect it from the irritation of the antiseptic, must be used. In the first one this does not matter, because it is necessary to have the antiseptic as strong as possible, and there is no danger of setting up suppuration by the antiseptic in twenty-four hours. The protective must itself be antiseptic. The basis of the one in use is the common oil silk, coated with a soluble film (or else the acid runs off it) of a mixture of one part of dextrine, two parts of powdered starch, and sixteen parts of cold watery solution of carbolic acid (1 to 20). Oiled silk, thus prepared, becomes uniformly moistened when dipped in a solution of the acid, so that all risk of communicating putrefactive mischief along with it is avoided; and if it is used in two layers it opposes a pretty effective barrier to carbolic acid, as is sufficiently illustrated by the absence of irritation in the present case. "I believe it to be best in all cases to change everything on the day following the injury, because the effusion from the wound is then of a bloody character, and though the lac plaster certainly sheds the discharge admirably, yet it is possible that a layer of clot may be lying beneath it which might interfere with its antiseptic operation." Afterwards the intervals must be regulated by the quantity of discharge. Any parts in the vicinity of a contused wound which have been damaged must be treated as separate wounds; they must not be allowed to slough and putrefy. The skin must be carefully examined for damaged patches. A case is mentioned in which this was not done. Some very interesting remarks are made on suppuration, granulation, &c. With regard to the injury to the ankle, it only remains to state that six weeks after the accident, the fracture of the internal malleolus had united firmly, the foot was in good position, while the patient could move the joint through a considerable angle. Four scalp wounds he suffered from—three of which involved exposure and injury to the bone—healed completely without a drop of pus. One of the sutures behaved just like a metallic one. A compound fracture of the elbow, which also existed, healed without any suppuration. Five weeks after the injury the splint was removed; the broken olecranon being firmly united and the

patient having free motion of the articulation at the end of six weeks.

The effects of antiseptics on the salubrity of an hospital.—Mr. Lister writes on this subject. He says that the antiseptic system has been in use long enough to allow of a fair estimate of its usefulness, as regards the salubrity of a hospital, being formed. He considered the wards at Glasgow in a very unhealthy state. Various revelations as to causes for this were disclosed from time to time, especially that there were a number of coffins, containing bodies, under the new building, placed there at the time of the cholera epidemic. During three years, however, there was complete immunity from the ordinary evils of surgical hospitals, since the introduction of the antiseptic plan. First, of pyæmia. This fearful disease used to occur principally in two classes of cases, namely, compound fractures and the major amputations. "In compound fractures it was so rife, just before the introduction of the antiseptic system, that I had one of the sulphites administered internally, as a prophylactic, in accordance with Polli's views, to every patient admitted with this kind of injury, though I cannot say that we observed any distinct evidence of advantage from the practice. But since I began to treat compound fractures on the antiseptic system, while no internal treatment has been used, I have not had pyæmia in a single instance, although I have had in all thirty-two cases—six in the forearm, five in the arm, eighteen in the leg, and three in the thigh. These cases do not include those in which the injury was so great as to demand immediate amputation. But, it must be remarked, that many of the limbs saved were so severely injured that I should formerly have removed them without hesitation. I almost forget the kind of considerations which used to determine me to amputate under the old treatment, though I know that experience taught us that it was only in comparatively mild cases that it was justifiable to attempt to save the limb. Now, however, there is scarcely any amount or kind of injury of bones, joints, or soft parts, which I regard as inconsistent with conservative treatment, except such destruction of tissue as makes gangrene of the limb inevitable as an immediate consequence. But I may take this opportunity of observing that the attempt to save a limb, which under ordinary treatment would be subjected to immediate amputation, ought not to be made lightly, or without a thorough acquaintance with some trustworthy method of carrying out the antiseptic system; by which I mean, not the mere use of an antiseptic, however potent, *but such management of the case as shall effectually prevent the occurrence of putrefaction in the part concerned.*" "If the treatment is not well carried out, by the time it has failed the patient is so much prostrated that the operation, if performed, is probably too late," and thus a loose and trifling style of "giving the treatment a trial" swells the death-rate at once of compound fracture and of amputation.

In two years preceding the introduction of the antiseptic treatment, of thirty-five cases of amputation (major), sixteen died, or one death in every two and a half cases. During the antiseptic period, of forty cases there were only six deaths, or one death in every six and two thirds.

It happens that there were twelve cases of amputation of the arm in each period. In the first, one half of them died; in the second, only one. Of the six, four died of pyæmia, and one of hospital gangrene. The one death in the second period took place "in spite of the operation, not as a result of it, from pyæmia, which resulted from fetid suppuration in a metacarpal bone, and continued after I had removed the hand, in the faint hope that the constitutional mischief might be thrown off." In one case only did pyæmia result after amputation of the lower limb, after amputation at the knee-joint, in a young man, where putrefaction occurred from mismanagement. Here the symptoms presented themselves during life, and the femoral vein was found loaded with pus on dissection. "I do not wish to be understood as implying that it (putrefaction) can always be avoided in stumps. In the present state of surgical practice this is far from being the case. When sinuses exist in connection with a diseased joint, putrefaction is present in them at the outset; and even if they are injected with an antiseptic solution before the operation, it can never be certain that the liquid penetrates to every recess of these often complicated passages, or destroys the vitality of the putrefactive organisms lurking, perhaps, in portions of lymph or slough." "It is, I suspect, for want of bearing this point in mind, that disappointment has often been experienced in applying antiseptic treatment to amputations and excisions. The full possible benefits of the system can never be obtained in such cases till it shall be deeply impressed upon the profession and the public that abscesses, more especially those in connection with diseased joints, must never either be allowed to break of themselves or be opened without antiseptic precautions. The practice which I have found to answer best in amputations and excisions in parts affected with sinuses is, after injecting the sinuses with a powerful antiseptic, to apply to the cut surface a pretty strong solution of chloride of zinc (say, forty grains to the ounce), as recommended by Mr. Campbell de Morgan, and then employ an external antiseptic dressing, in the hope, though never in the certainty, that putrefaction will be prevented. Chloride of zinc having the peculiarity of producing a remarkably persistent antiseptic effect upon the cut surface, protects it during the dangerous period preceding granulation, when the recently divided tissues are both sensitive and prone to absorption, so that, even if putrefaction does occur, the risk of inflammation and pyæmia is greatly diminished." "I am satisfied that the difficulties of the antiseptic management (as applied to the lower limb) are not insuperable." "One of the cases requires more notice. It belonged to a class of injuries in which the benefits of the antiseptic treatment have been conspicuously apparent, namely severe contused wounds of the hands and feet, such as are very frequent in a great centre of manufacture like Glasgow. Formerly there were no injuries more unsatisfactory to deal with. The uncertainty of the extent of the damage inflicted by the contusion made it a most perplexing question where amputation should be performed." "It is an unspeakable satisfaction to be able to avoid amputation altogether in such cases, merely taking away such portions as may be actually destroyed, and leaving the weakened tissues in the

vicinity to recover themselves quietly, instead of perishing under the irritating and poisoning influence of putrefaction; while any dead portions that may remain are absorbed more or less completely, like the extravasated blood, and replaced by tissue of new formation."

Next of erysipelas. "During the antiseptic period several cases have been admitted into my ward from without, but only one has originated in them. This occurred in a young man with disease of the foot, accompanied by sinuses extending into the leg. I performed amputation at the ankle, but putrefaction continued in the sinuses; and after the lapse of a considerable period erysipelas occurred in connection with them." He recovered, but subsequently had another attack at his own home, "implying that the tendency to it was rather in his own system than in the locality." Subsequently it was necessary to amputate higher up. The stump healed well, but while he was trying what weight he could bear on the stump, a third attack of erysipelas occurred without the slightest sinus remaining. "This case seems interesting, as something intermediate—as it were a connecting link—between traumatic and idiopathic erysipelas." "Hospital gangrene was, formerly, both frequent and severe amongst my patients." Since the introduction of the antiseptic system the contrast has been most striking. "For the first nine months we had not a single case of the disease. Since that time it has shown itself now and then, but in a mild form, invariably yielding to treatment, never occurring in recent cases, but only in old sores weakened by the influence of surrounding cicatrix." "I do not recollect more than one example of it during the last year." "In short, hospital gangrene, like pyæmia and erysipelas, may be said to have been banished by the antiseptic system." "The emanations from sores are poured directly into the confined atmosphere in which the patients are, and any one familiar with the faint sickly smell commonly perceptible in surgical wards under ordinary treatment, and still more with the stench which prevails at the time of the daily dressing, will readily understand that putrid exhalations from the patients may be a source of mischief, compared with which the other circumstances alluded to (bodies buried under the hospital, &c.), may be of comparatively trifling consequence." "Though granulating surfaces will commonly heal well enough under a putrid dressing (for such the cleanly water dressing becomes within a few hours of its application), every case so treated furnishes its quota to the vitiation of the general atmosphere of the ward. Hence, for the sake of the inmates generally, it is obviously desirable that healing sores should be dressed with some application which while permitting, or, if possible, favoring cicatrisation, should prevent odour. For this purpose some dressing, unstimulating, but at the same time persistent in antiseptic action, is requisite—a combination which I have sought in various different forms to obtain, and, of late more especially with very satisfactory results; so that while the healing of superficial sores proceeded with greater rapidity than under the water dressing, all my sixty patients might sometimes be dressed without the odour of putrefaction being perceptible in one of them. The result of this great change has been such as to demonstrate conclusively that the exhalations from foul

discharges are the essential source of the insalubrity of surgical wards; and that when this is effectually suppressed, other conditions, which we are accustomed to regard as most pernicious, become powerless to produce serious evil. It is obvious that the facts recorded in this paper are of extreme importance with reference to the vexed question of hospital construction. With the view of assimilating the atmospheric condition of our large hospitals to that of a private dwelling, it has been lately proposed to do away with them altogether in their present form, and to substitute for them a congeries of cast-iron cottages, capable of being occasionally taken down, cleansed, and reconstructed, —a plan which, besides involving enormous expense, would interfere most seriously with efficient supervision of the patients and with the teaching of students at the bedside." "A degree of salubrity equal to that of the best private houses has been obtained in peculiarly unhealthy wards of a very large hospital by simply enforcing strict attention to the antiseptic principle." "The antiseptic system is continually attracting more and more attention in various parts of the world; and whether in the form it has now reached, or in some other and more perfect shape, its universal adoption can be only a question of time. The noble institutions of which our country is justly proud, admirably adapted alike for the treatment of the sick and the instruction of the student, will then be cleared of the only blot that now attaches to them—the malignant influence of impure atmosphere." ('Lancet,' Jan. 1 and 8, 1870.)

Mr. Lister records his further experience (at Edinburgh) of the increased salubrity of a hospital in consequence of the employment of antiseptic treatment, and publishes a letter from Prof. Saxtorph, of Copenhagen, detailing the great advantages experienced at Copenhagen since the adoption of Mr. Lister's plan. ('Lancet,' Aug. 27, 1870.)

Petroleum.—Dr. Fayrer has been using petroleum (or earth oil) as an antiseptic dressing for wounds. He uses it undiluted, or diluted with equal parts of oil or glycerine. It has some deodorising power; it appears also to have that of limiting suppuration and retarding decomposition. It is also useful as a stimulating and detergent application to sloughing and ulcerating surfaces. ('Med. Times and Gaz.,' Jan. 22, 1870.)

Cere-cloth.—Mr. Lund writes on the use of antiseptic cere-cloth in the treatment of wounds. It is cloth, or thin calico, saturated with waxy matter in the form of solid paraffin, to which are added a little oil and wax, with carbolic acid in certain proportions. ('Brit. Med. Journ.,' Sept. 4, 1869.)

Sulphurous acid dressing to wounds.—Mr. Balfour ('Edin. Med. Journ.,' June, 1869, p. 1067) has found a wash of sulphurous acid—one part to twelve of water—very useful in the treatment of contused wounds.

Carded oakum.—Mr. Pollock has been using carded oakum with considerable advantage. The tarry odour masks foul smells, and the discharge is absorbed. ('Lancet,' Jan. 8, 1870.)

Perforated zinc.—Prof. Cleland has found a roll of perforated zinc an extremely convenient thing to have at hand in surgical practice. In many cases it will replace the use of pasteboard and wooden splints. In dressing stumps he has used it with advantage. He takes a strip, about half a yard long, and about the breadth of the stump, and folds it like a pair of sugar-tongs; then having arranged the proper pads in front and behind, and leaving the lips of the wound bare, or only slightly covered, he slips on the zinc, so as to have one end in front and the other behind the stump, while the folded part is allowed to project some inches beyond it, and, lastly, he secures the whole with a bandage. The zinc acts as a protection, and causes the pressure of the bandage to act in the desired directions. The surface of the wound can often be looked at and cleaned, without disturbing the bandage, by simply dividing the prominent fold of the zinc, turning the two parts a little back, and replacing them after cleaning the wound. ('Med. Times and Gaz.,' July 30, 1870.)

Ligature of arteries on the antiseptic plan.—In the 'Lancet,' and 'Brit. Med. Journ.,' April 31, 1869, is a communication from Mr. Joseph Lister. After stating his conviction that ligature is the safest and best means of arresting the flow of blood through an artery, he passes on to the evils attendant on ligature, and then to the merits of the antiseptic plan. One point brought out by this is, that a portion of dead tissue is not necessarily thrown off by suppuration, but, unless altered by putrefaction, or imbued with stimulating salts (artificially), serves as pabulum for the surrounding living parts, which remove it by a sure process of absorption. Hence the death of a part of the external coat (of an artery) included in a ligature, does not necessarily render it a cause of suppuration. The carotid artery of a horse, close to its origin, was tied with a ligature of pure silk steeped in a solution of carbolic acid, the ends of the silk cut off and the wound treated "antiseptically." After six weeks the horse was killed and the parts examined. A fine clot was found on the cardiac side, but none on the distal side. Under these circumstances had the ligature been applied in the usual way, suppuration would have occurred, and hæmorrhage would have ensued from the distal end. As it was, however, no suppuration occurred, and no weakening of the vessel. The cul de sac showed some irregularity, in consequence of puckering of the two coats, but the surface appeared completely cicatrised, and presented the same character as the natural lining membrane of the vessel; and the ligature, which seemed as yet unaltered, was found lying in a bed of firm tissue, that within the noose being apparently a new formation in place of the portion of external coat killed by the ligature; while, externally, the constriction necessarily caused in the first instance by the operation, had been filled in by a similar compact structure.

Mr. Lister tried this plan on the human subject. The patient was a woman, æt. 51, suffering from aneurism of the upper part of the femoral. Ligature of the external iliac was performed; a silk thread, as in the last case, was used, except that it had been steeped for two hours in undiluted liquid carbolic acid instead of a watery solution, to make sure

of the destruction of all septic organisms lodged in its interstices. The wound, being dressed antiseptically, became superficial without suppuration, the patient, meanwhile, experiencing no febrile disturbance, her appetite returning as soon as the sickness from chloroform subsided. On the fourteenth day she sat upright in bed without inconvenience. Four weeks after the operation, the superficial sore being completely cicatrised, she was allowed to walk about her room. At the end of six weeks she was allowed out of doors. At the end of eleven months she, one day, suddenly felt something give way and expired. At the post-mortem an aneurism of the descending arch was found to have burst. The following were the appearances of the femoral aneurism, &c. The aneurism was not entirely obliterated, but remained about the size of a large filbert, of somewhat fusiform shape. The upper two thirds were solid, being occupied by firm coagulum adherent to the sac. The lower third, situated just at the bifurcation of the common femoral, had been kept free from coagulation by the recurrent stream of blood from the profunda into the superficial trunk. In the greater part of its length the artery could be traced with decolorised coagula adherent internally. But, at the narrowest part, the artery was reduced to mere fibrous tissue, constituting a dense fibrous band five eighths of an inch long, from the middle of which projected, at one side, a round buff coloured appendage about a line in diameter, somewhat obscured by a trifling amount of inflammatory condensation of texture in the immediate vicinity. On scratching this little body with the point of a knife, it was found to be a very thin-walled capsule, containing the knot of the ligature with two tapering ends, which were shorter than the thread was cut at the operation, while the noose had vanished altogether.

The surface of the knot also showed evidences of having been subjected to an eroding agency similar, no doubt, to that exerted by granulations on dead bone absorbed by them (see 'Lancet,' March 23, 1867). Besides the remnant of the ligature the tiny capsule contained a minute quantity of yellowish semi-fluid material, looking to the naked eye very like pus. On examination with the microscope, however, pus corpuscles formed but a small proportion of its composition, which was, principally, rounded cells of smaller size and fibro-plastic cells, together with some imperfect fibres and granular material. In addition were some fragments of silk. These pieces had the appearance of being superficially nibbled, so to speak, confirming the impression conveyed by the naked-eye appearances of the knot, that the silk had been eroded by the absorbing action of the surrounding parts. Why it was that the parts immediately around the silk should have assumed so imperfect a structure is a difficult question but one of great interest. The indication is that an incipient abscess was forming, set up by the irritation (though slight) of the silk. Mr. Lister then thought of trying the old plan of catgut ligatures with the addition of the antiseptic principle. He tied the common carotid of a calf. Ligatures of two different kinds were employed at an interval of about an inch and a half, the sheath in between being undisturbed. The cardiac one was of home manufacture, composed of three strips of peritoneum from the small intestine of an ox firmly twisted together in a threefold

cord. The distal thread was of fine catgut ("minikin gut.") Both had been soaked for four hours in a saturated watery solution of carbolic acid which swelled and softened them, so that the home-made thread was too large to enter the eye of the needle except at either extremity where it was smaller. This ligature tied well, the other broke and a second was tied over it. All were cut short except three quarters of an inch of one end of the catgut left to see what would become of it. The antiseptic precautions adopted were, that after shaving the hair carbolic oil was thoroughly rubbed in; the sponges used in the operation were wrung out in a solution of the acid (one to forty), and all instruments, and fingers, and copper wire (for sutures) were dipped in it, and some was poured on the wound after the introduction of the last stitch, at one of the intervals left for the escape of any discharge. The outer dressing was a towel saturated with the oil, folded as broad as the length of the neck round which it was wrapped, so as to extend freely beyond the wound in all directions, and this was fastened on securely. A sheet of gutta percha was placed outside everything. A few ounces of the oil were poured daily over the towel for the first week, after which the dressings were left for three days, and then removed entirely. The stitches being removed one drop of pus escaped. Thirty days after the operation the calf was killed. On dissection there was an entire absence of inflammatory thickening in the vicinity of the vessel. On exposing the artery, at first sight the ligatures appeared there still as large as ever. On closer examination, however, it was found that they had been transformed into bands of living tissue, as the deeper layers of crust are, sometimes, in the treatment of compound fractures antiseptically (see 'Lancet,' March 16, 1867.) The persistence, in their substance, of the impurities of the original material explained the resemblance to their former condition. Some change of colour had occurred. The two fine pieces had become amalgamated in one fleshy thread inseparably blended with the external coat of the artery. The knots were nowhere discoverable, and the only indication of the end which had been left long were some few black specks upon a delicate thread of connective tissue in connection with the vessel. The massive knot of the cardiac ligature was represented by a smooth lump which appeared at first entirely homogeneous, but presented some black spots similar to the other one. On section, however, in the interior were some remains of the original three-fold twist just in the centre of the knot. A slender and irregular remnant of the noose was also found lying in a sort of tubular cavity extending about half round the vessel. On microscopic examination the new fleshy mass created at the expense of the ligature was found made up of fibro-plastic structure, fibres and elongated cells. Between the two ligatures there was a clot, but between the proximal ligature and the heart the formation of coagulum had been entirely prevented by a large vessel taking origin immediately above the part tied, which had thus borne for a month the full brunt of the cardiac impulse. Yet this part of the vessel appeared to have gained additional strength instead of being weakened as would have occurred without antiseptic precautions. At the distal end the artery had not been altered. The ligatures had been tied too gently to

thoroughly rupture the inner coats. Whatever effect they had produced at first had passed away. These appearances at the distal end revive the old question whether it would not be better to avoid rupture of the internal and middle coats, which could easily be done by using a pretty thick piece of catgut softened by steeping it in a watery solution of carbolic acid. This, however, is probably a matter of indifference; for, judging from the condition of the artery at the cardiac ligature, the injury done by tight tying seems to lead to changes which increase its power of resistance, which was certainly severely tested in the present instance. Mr. Lister concludes by remarking that it would appear that by applying a ligature of animal tissue antiseptically upon an artery, whether tightly or gently, we virtually surround it by a ring of living tissue, and strengthen the vessel where we obstruct it. The surgeon, therefore, may now tie an arterial trunk in its continuity close to a large branch secure against secondary hæmorrhage and deep-seated suppuration—provided always that he has so studied the principles of the antiseptic treatment, and has so carefully considered the details of the mode of dressing best adapted to the particular case in hand, that he can feel certain of avoiding putrefaction in the wound. Mr. Lister would now proceed without hesitation to apply a ligature on the innominate, believing that it would prove a very safe procedure. As regards the material for ligature, sheep catgut may be had of all thicknesses at a very low price. A watery solution of carbolic acid renders the fine ones brittle and the stouter too thick. The method recommended is to steep the catgut in a solution of acid in five parts of oil, with a very small quantity of water diffused through it. After soaking for a while in this, if placed in water the gut does not swell. An oily solution is not convenient to work with. The thickness for an artery in its continuity should be that of ordinary purse-silk, but for ordinary wounds much finer is better. Mr. Lister carries some catgut rolled on wood in a small bottle with a little of the antiseptic solution. He uses torsion, however, for all ordinary wounds.

Carbolized ligature.—Mr. Paget tied the femoral artery, in a case of aneurism, with a carbolized ligature, and then dressed the wound antiseptically. The wound healed in ten days, but re-opened superficially and a poultice was applied. ('Lancet,' Dec. 17, 1870.)

Dr. Buchanan has had a successful case on Mr. Lister's plan, catgut ligature steeped in carbolic acid, and the wound dressed antiseptically. ('Lancet,' April 23, 1870.)

Mr. Bickersteth records a case in which he ligatured the external iliac artery for aneurism with a carbolized catgut ligature successfully. The wound was also dressed antiseptically. The man left the hospital in five weeks. ('Lancet,' June 12, 1869.)

In the 'Lancet,' May 29, 1869, are the notes of a case of aneurism in which Mr. Bickersteth ligatured the common carotid. He used a fine catgut ligature soaked in carbolic acid. The wound healed in a week.

Mr. Spence records a case in which he ligatured the common carotid with catgut, and the ligature gave way in rather less than twenty-four

hours afterwards. The ligature was a fine one, firm and even in structure; and before using it, it was dipped into the ordinary weak solution to render it pliable. The knot was carefully tied. The next morning the patient suddenly became comatose and paralysed on one side. He died on the fourth day. On examining the carotid artery, Mr. Spence was surprised to find that there was no appearance of constriction, in fact, at first sight, there was nothing to be recognised as the ligature. Further examination, however, showed that what at first seemed some lymph and tissue was really the softened catgut. The circle of the ligature had given way on the side nearest the trachea. The knot was quite sound and firm. The texture of the catgut under a lens was recognisable, but gelatinous and pulpy. The softened catgut had probably yielded while the patient was vomiting. ('Lancet,' June 5, 1869.)

Carbolic acid treatment of wounds.—In the 'Œsterreich. Zeitschrift für pract. Heilkunde,' Nos. 30, 31, 32, and 33 for 1869, J. Englisch gives the results of observations on the use of carbolic acid, made on more than 400 patients in Dillet's practice. Not only were the beneficial results of this treatment manifested in incised and contused wounds by diminution of suppuration, limitation of sloughing, and rapid cicatrisation; but also in cases of complicated fracture, where under other circumstances amputation would have been called for. In cases of subaponeurotic inflammation of the hand, even where the sheaths of the tendons were destroyed, the use of carbolic acid, by reducing the extent of the cicatrices, prevented contraction. Good effects were also observed in periadenitis; but the results were less satisfactory in cases of glandular disease of constitutional origin. The same remark is applicable to diseases of the bones. Where the periosteum alone was diseased, a good result might be expected, but in cases of osteitis and osteomyelitis from constitutional dyscrasia the carbolic acid did not exert any remarkable influence. Successful results were observed in cases of suppuration of the joints. In operative wounds, the carbolic acid exercised a beneficial influence only when it was rapidly absorbed and appeared in the urine. In five cases of hydrocele treated by the radical section, rapid contraction of the serous sac was observed. Pyæmia occurred in three cases only, erysipelas very rarely, and albuminuria was never observed to follow the use of carbolic acid.

Acupressure.—In the 'Brit. Med. Journal,' June 19, 1869, Mr. J. F. West records his experience of acupressure in nineteen cases. In seventeen there was no hæmorrhage, the needles being removed at the end of from thirty-six to seventy-two hours. In two of the cases hæmorrhage did occur. In one case, in a lad (æt. 13) whose thigh had been amputated, hæmorrhage occurred when the needle was withdrawn from the femoral, but was controlled by digital pressure for a few minutes. Next day the hæmorrhage recurred, but was controlled finally by digital pressure for five hours. The other case was also that of a lad (æt. 17) whose leg was amputated. The needles were removed after 120 hours. Hæmorrhage occurred on the 5th, 20th, 21st, 22nd,

23rd, 25th, and 42nd days, arrested each time and finally by tourniquet. Two patients died, and a post-mortem examination showed that the arteries had been firmly compressed, and that coagula existed on the cardiac side, blocking the arteries completely. There was no extravasation between the flaps.

In the 'Lancet,' Jan. 1, 1870, is a note of three cases of removal of the breast, in which acupressure was used by Dr. Pirrie. The first case was cured in seventeen days, the second in twelve days, and the third (one of very large tumour) in fifteen days. The needles were removed in eight hours in the second and nineteen in the third case.

Mr. Forster relates his further experience of acupressure and torsion in sixteen cases, under the care of himself or colleagues. "During the last two years I have," he says, "in no case used a ligature where any attempt has been made to obtain adhesion in a wound, nor where I have been able to practice torsion." ('Guy's Hosp. Rep.,' xiv, p. 165; also 'Clin. Soc. Trans.,' iii, p. 55.)

Torsion of arteries.—A paper on this subject, with illustrations, will be found in the 'Guy's Hosp. Rep.,' xv, p. 285, by Mr. Bryant. He thinks that the artery should not be twisted so many times as is generally done. The internal coat becomes too much split up and not valvular as it should be. This is especially the case with diseased vessels, which should be twisted twice only, as a rule. Small vessels may be twisted till the end comes off without bad results; but it is dangerous to do this with the larger ones.

Mr. J. D. Hill tabulates the results of his use of torsion in the arrest of hæmorrhage. ('Lancet,' Nov. 5, 1870.)

Dr. G. M. Humphrey writes on torsion of arteries in the 'British Med. Journal,' Jan. 2nd and Jan. 9th, 1869. In some experiments on the dead subject, he found that a healthy artery, when twisted, will bear, on the average, a pressure of about twelve inches of mercury; a vessel, after ligature, a pressure of thirty inches. An artery is generally subjected during life to a pressure of about six inches of mercury, so that torsion is sufficient for vessels of the size of the femoral.

In the 'Dub. Quart. Journal,' Feb., 1869, Mr. Porter suggests the use of an artery compressor in the treatment of some surgical aneurisms. It consists of a piece of silver wire about the strength of an ordinary probe, which is bent into a triangular shape about four inches in length, and the apex surmounted by a small ring. The base is perforated by two little apertures just large enough to permit a fine wire to pass easily through. The wire is first carried round the denuded artery in an aneurism needle, and each extremity of it passed through the holes in the compressor; one end should be fastened by twisting it through the ring at the top, and the compressor may then be gently pushed down on the vessel, when by pulling at the free end of the wire, the requisite pressure may be effected. The instrument can be removed with the greatest facility, when pressure is no longer required, by cutting the wire at each side, lifting up the compressor, and then gently pulling away the wire from beneath the artery.

Mr. W. Stokes details a case of temporary deligation of the abdominal

aorta by means of Mr. Porter's compressor, and gives references to other cases of ligature of aorta. ('Dub. Quart. Journ.,' Aug. 1869.)

Forced flexion of limbs in traumatic hæmorrhage.—Adelmann, of Dorpat (quoted by 'L'Inparziale,' of Florence), strongly advocates flexion of the limbs in traumatic hæmorrhage. He quotes authorities showing that though this was formerly practised it has now fallen into disuse. He gives a case of his own in which the plan was useful. He thinks that flexion ought to be tried before other hæmostatic means are employed; that this practice should be made known among the people at large, so that it might be used before the arrival of the surgeon; and that soldiers in the field should be made acquainted with it. ('Lancet,' Jan. 22, 1870.)

Arteries.—Mr. Maunder, in narrating a case of ligature of the femoral artery ('Clin. Soc. Trans.,' ii, p. 5) for punctured wound, discusses the question of the colour of the blood coming from the lower end of the artery. He says, when the hole in the artery was exposed and pressure only remained below it, arterial blood flowed; but when the pressure was only applied above it, venous blood flowed. He wished to call special attention to the *fact* that the femoral artery having been opened in its continuity, and the normal circulation through it being checked, dark blood shall flow from its distal portion during, at least, the first hour after the lesion. Such was the case in the above instance, and a similar fact as regards colour has been noted by Guthrie. In the instance of wound of the superficial femoral artery, in which either a ligature has been applied to the proximal side, or pressure to arrest hæmorrhage has stopped the flow of blood along the main channel, the vis à tergo is withdrawn in great measure, and the collateral circulation, though sufficient to support the life of the limb, is unequal to do its part to propel the venous blood, and consequently, as no vacuum may exist in the arterial system, venous blood regurgitates. Thus is explained the phenomenon of dark blood pouring from the distal portion of a wounded or opened artery. On the other hand, in the case of aneurism, the arterial supply to the limb through the chief vessel has been more or less imperfect, and the longer the disease has existed the greater the imperfection. But, to compensate for this irregularity, the collateral circulation becomes established, and the limb is more or less independent of the main vessel for its supply of arterial blood; and so, when this is ligatured, the vis à tergo acts through the smaller but now enlarged arteries, and does its part through these in helping the venous blood towards the heart, and no regurgitation can take place.

Mr. Maunder then alluded to a case in which the femoral artery was tied to arrest inflammation of the knee-joint, in a man thirty-three years of age, following a lacerated wound. The case is fully narrated, p. 37 of the same volume. (This case, and also Mr. Moore's, p. 61, is noted in 'Bien. Retrosp.,' 1867-8, p. 284, &c.)

Arterial transfusion.—A long abstract of a paper by Prof. Hueter,

on arterial transfusion (which he prefers to venous) is given in 'Med.-Chir. Rev.,' July 1870, p. 272, from 'Archiv für Klin. Chirurg.,' xii, H. 1.

Resisting power of arteries secured by ligature, torsion, and acupressure.—Dr. Alex. Ogston has made some experiments with reference to the resisting power of arteries under the influence of acupressure, of torsion, and of ligatures. The vessels were injected with fluid, and the amount of the pressure exercised on their walls estimated by a dynamometer. When a vessel had been twisted a weak steady current soon opened the twist, and the stream flowed out at the end, the conclusion being that an artery so secured would not be able to resist the full pressure of the heart's action. After acupressure, without rupture of the inner coats, very little pressure was required to overcome the resistance; if, however, the needle ruptured the coats, then considerable pressure was borne. After ligature, pressure, equivalent to 114 inches of mercury, was insufficient to make the vessel yield, whereas, in other cases, from 27 to 40 inches represented the highest amounts borne.—('Lancet,' April 17, 1869.)

Amputation of arm, with removal of the scapula, &c.—Dr. Heron Watson, in the 'Edin. Med. Journal,' Aug. 1869, p. 124, records the case of a lad who had his arm torn off in a machine accident. By further laying bare the dorsum of the scapula, then freeing the posterior border, and lastly, the upper and inner part, the bone was removed. Afterwards the clavicle was removed as far inwards as the costo-clavicular ligament. Very little blood was lost, but a large number of vessels required ligature. The lad recovered. Woodcuts are given of his appearance, and one also from a remarkable portrait of a man whose case is recorded by Cheselden. Tables are added of sixty-eight cases of removal of the whole or part of the scapula. Another case, under the care of Dr. M'Leod, of Bengal, not included in these tables, is recorded at p. 567 of 'Edin. Med. Journal,' Dec. 1869.

Dr. G. H. Macleod writes on amputation at the ankle-joint. He has chiefly practised Mr. Syme's method (in 32 cases out of 50).—('Brit. Med. Journal,' Aug. 28, 1869.)

Amputation through the knee-joint.—Mr. Pollock, in a communication to the Med.-Chir. Society, strongly advocates amputation through the knee-joint in suitable cases. The flap should be long, anterior, and broad; the patella left if healthy. The stump is much more useful, and an artificial limb can be adapted more easily. In the 'Dub. Quart. Med. Journ.,' May 1870, will be found four cases of amputation through the knee-joint, and one of Carden's operation, under the care of Dr. MacCormac. The patella was left in each case, and remained movable. Dr. MacCormac strongly advocates the non-removal of the cartilaginous surfaces. The incisions were begun one inch below the head of the tibia, avoiding cutting between the two flaps higher than was necessary, as insisted on by Mr. Pollock. Statistics from various sources are quoted.

Retraction of flaps.—Mr. Maunder notes that on one occasion, while amputating through the knee-joint, at the moment that the hamstring tendons were cut, the structures at the back of the femur became enormously retracted—to the extent of three or four inches—in a longitudinal direction. At first sight, it appeared to be necessary to make a higher section of the bone, but it was found that although the retraction in the middle line could not be remedied, still the skin on either side was lax enough to allow of the flaps coming together in such a manner that a T-shaped instead of a linear wound resulted. The patient was a woman, and progressed uninterruptedly well. When dismissed the wound was T-shaped, not quite healed, and situated at the back of the condyles.—('Med. Times and Gaz.,' July 2, 1870.)

Lateral flaps.—Dr. Stephen Smith advocates the employment of lateral flaps in cases of amputation at the knee-joint. The incision is commenced about one inch below the tubercle of the tibia, and carried downwards and forwards over the most prominent part of the side of the leg until it reaches the under surface, when it is curved upwards towards the median line. When that point is reached, it is continued directly upwards to the centre of the articulation. A second incision begins at the same point as the first, and pursues a similar direction upon the opposite side of the leg, and meets it in the median line on the posterior part.

The following precautions are given:—The incisions should incline moderately forwards down to the curve of the side of the leg to secure ample covering for the condyles, and the internal one should have additional fulness, for the purpose of covering the internal condyle. The skin, fascia and cellular tissue are raised, and the ligamentum patellæ divided, allowing the patella to remain. The ligatures are all drawn out of the posterior angle of the wound. When cicatrisation is completed the scar sinks into the inter-condyloid notch, and disappears from the face of the stump, and offers no point of contact with the artificial appliance. The drainage is good, and the anterior portion of the flaps unite by first intention. This method of amputation may be employed in any situation. The incision on the posterior part should reach as high as the point of division of the bone, and the muscles are divided circularly. The author speaks of having several times performed amputations at the knee, and frequently of the leg and thigh by his method successfully. Illustrations are given. ('Amer. Journ. Med. Sci.,' Jan. 1870, p. 33.)

Amputation at the hip-joint.—Mr. Annandale has made some observations as to the extent of surface exposed in amputation at the hip-joint as ordinarily performed, and also when the incisions are made lower down, as recommended by some. He finds that the flaps measure less in the plan usually adopted than by any other. ('Edin. Med. Journ.,' April, 1870.)

Amputation of the thigh, supra-condyloid.—Dr. Wm. Stokes read a

paper before the Med. and Chir. Soc. on supra-condyloid amputation of the thigh. The differences between the plan proposed by the author and the Italian modification of Cardens (known as Gritti's) are—1st. That the femoral section is made, in all cases, fully half an inch above the antero-superior edge of the condyloid articular cartilage. 2nd. That in all cases the cartilaginous surface of the patella must be removed. 3rd. That the flap should be oval, not rectangular. 4th. That there should be a posterior flap fully one third of the length of the anterior one. The author then stated the advantages which he believed supra-condyloid amputations possessed over those through the joint. 1. The stump being more useful in progression. 2. Possibility of making pressure on the face of the stump. 3. The patient not being obliged to walk as if he had anchylosis of the hip-joint. 4. The operation being less hazardous than amputation of the thigh, from being further removed from the trunk. 5. The shock is less than after the higher amputations of the thigh. 6 The muscular interspaces are unopened. 7. Less chance of protracted suppuration, from the anterior flap consisting for the most part of skin and fascia. 8. Less chance of purulent absorption, from the posterior surface of the anterior flap being covered with synovial membrane. 9. Probable advantages derived from having the cut surface of the femur covered by the patella. 10. Advantages derived from preserving the attachments of the extensors of the thigh. 11. Impossibility of a conical stump resulting. 12. No liability to the formation of tubular sequestra. 13. Less chance of phlebitis, from the vessels being all divided at right angles to their continuity, not obliquely, as in all other flap amputations, which necessitates the wounds in the vessels being so much greater in extent. He considered this operation to include the advantages of both the flap and circular amputations of the thigh, and the defects of neither. ('Lancet,' June 8, 1870.)

Amputations.—Of 137 amputations the mortality was, of shoulder, 63 per cent.; of arm, 38 per cent.; of forearm, 12 per cent.; of hip, 100 per cent.; of thigh, 56 per cent.; of leg, 32 per cent.; of foot, 40 per cent. ('Boston City Hosp. Rep.,' 1870, pp. 601—648.)

Resection of the tibio-tarsal articulation.—Dr. Spillman, Professeur-agrégé at the Val-de-Grâce Hospital, collects in the 'Archives Générales de Méd.' for February, 1869, notes of a number of cases of excision of the ankle-joint, and makes some comments on the operations. He arranges the cases in three categories:—1. Those in which the operation was undertaken on account of fracture or dislocation. 2. Those where it was performed on account of gunshot wounds. 3. Those in which the part was excised on account of disease.

In the first category, 68 cases are referred to, in which the operation was done within six weeks from the receipt of the injury. Of these, 15 failed, as follows:—11 died, in 2 the patients died after secondary amputation, and in 2 others secondary amputation was successful. After an elaborate description of the merits of the operation in such cases, Spillman arrives at the following conclusions:—1. Resection of

the ankle-joint is in itself so severe an operation that it ought not to be undertaken in cases of compound fractures and dislocations unless there be some special indication. The most fitting mode of treating such accidents consists in reduction and removal of splinters, and there are sufficient facts revealed here and there to show that patients will recover under such treatment. 2. Secondary resection of the ankle is a less severe proceeding than secondary amputation; it should therefore be employed whenever there is reason to expect that, in consequence of complications, the attempts to save the joint will fail. That a useful limb is left after the operation appears to be sufficiently proved.

In the second category nine cases are noted as having occurred in the practice of European military surgeons, the operation having been (with one exception) secondary, with one death only from gangrene. On the other hand, eight excisions of the tibio-tarsal joint are referred to as having been performed by the American surgeons in the late war, in which the results were less successful. Spillman says that more experience is required before a judgment can be pronounced on the value of the operation in cases of gunshot wound.

The third category comprehends 73 cases where the tibio-tarsal joint was excised on account of disease. Among these, the operation was successful in 50; in 2 the result was doubtful; in 1 the disease continued in spite of the operation; 12 died; and secondary amputation was necessary in 8 cases, of which 2 died, 3 were successful, and the result of the other 3 is not indicated. Dividing the cases into those of excision of the outer ankle and of the inner ankle, it is found that the end of the fibula was removed in 22 cases, in one of which secondary amputation was afterwards necessary, while 4 other patients died, more immediately from the operation. Spillman's conclusion is, that resection of the lower end of the fibula is attended with a low rate of mortality, gives excellent results with regard to function, and may be performed at any age. Of cases where the lower end of the tibia was removed, there are 51. In 12 the disease was of traumatic origin, and the result of operations was successful in 11. In 37 cases where the disease was constitutional the results were—recoveries, 22; persistence of the disease two years after the operation, 1; deaths, 7; secondary amputations, 7, of which 2 were fatal, 2 successful, and the result of the other 3 is not stated. Thus, excision of the lower end of the tibia gives 15 failures in 37 operations. Having commented on these results, Spillman sums up as follows:—1. Partial or total resection of the tibio-tarsal joint on account of caries, necrosis, or prolonged suppuration, is an excellent operation when the conditions above mentioned have been produced by a wound of the joint. 2. Resection in cases of disease of constitutional origin (pathological affections, properly so called) is very hazardous, not only in regard to the mortality which follows it, but also to the liability to a recurrence of disease. 3. An exception must be made in favour of partial resection of the fibula, which is generally not followed by relapse.

Removal of the astragalus, half of the os calcis, three fourths of the scaphoid, and part of tibia. — Mr. Mulvany, in the 'Lancet,'

Nov. 6, 1869, records the case of a gentleman who was thrown out of a "buggy" in Canada. He was not seen till three weeks afterwards. It was found that he had sustained a compound dislocation of the ankle, which remained unreduced. Some necrosed bone was removed, and the displacement reduced. After another fortnight it was certain there was more diseased bone. In about two months from the accident the removal of the bones was determined on. A long incision was made on the inner side. An enormous amount of disease of the bones was detected. A transverse incision outwards from the other, for almost an inch, was made. With a tenotome, keeping close to the bones, they were removed, one after another, with the help of bone forceps. The greater part of the scaphoid, half of the os calcis, the whole of the astragalus, and the lower end of the tibia, with the malleoli, were taken away. In two months the patient could walk with the aid of a stick. At the end of eighteen months he was seen again, and was able to walk "exceedingly well without help, wearing a peculiarly constructed boot of his own invention." The ankle was strong and admitted of a considerable amount of motion. A woodcut of the ankle at this time is given.

Excision of the ankle.—Mr. Holmes ('St. Geo. Hosp. Rep.,' iv, p. 239) remarks on the rarity with which the operation of excision of the ankle-joint is performed, and on the want of success attending it, as compared with the number of cases in which parts of the tarsal bones, together with the articular ends of the tibia and fibula, have been removed successfully. He narrates a case with the twofold object of showing that the operation is a justifiable one in appropriate cases, yielding results very far superior to Syme's or Pirogoff's amputation, which is the alternative usually suggested; and secondly, to call attention to the propriety of removing the whole astragalus when the disease in that bone is extensive. The patient was a country lad, æt. 18. The disease had followed a sprain two years before. Two lateral incisions were made, one behind either malleolus. Care was taken not to wound either of the tendons. The whole astragalus and the lower ends of the tibia and fibula were removed. Woodcuts are given of the condition of the bones. The wounds healed well. In seven weeks the lad left his bed. When sent out, the wounds were healed, he could walk well with a stick, the toes moved freely, and there was some little passive motion at the seat of operation. There was about two inches shortening. There is no note later than about four months. Mr. Holmes says, "On the first of the two points above stated, I think it will be conceded that the result which followed in this case is better than that of an amputation. This is not, indeed, of itself conclusive as to the propriety of the course pursued, for an accidental success may be obtained by an operation which would not generally be advisable. But it seems to me that in cases like the present the operation of excision would usually succeed, and that the reason why excisions of the ankle are not generally successful is, that they are done on a different class of cases. In the present instance the patient was a perfectly healthy lad; the disease obviously of recent traumatic origin,

and there was every reason to believe that the inflammatory softening was limited to the astragalus. On the other hand, this operation is often performed in cases where the whole or a great part of the tarsus is involved in inflammatory softening, and the patient is much reduced in health by confinement, pain and discharge, or is even affected with obvious constitutional symptoms. In such cases excision, which is a much severer operation than amputation, besides not being necessarily a final one, should not be recommended."*

A case of excision of the ankle-joint, followed by a useful limb, is narrated by Dr. Murray. ('Dub. Quart. Journ.,' Feb. 1870.)

Removal of articular extremities of tibia and fibula, the os calcis, the astragalus, and the scaphoid bones.—Dr. Fayrer mentions the case of a lad nine years of age, the subject of disease of the ankle, &c., on whom he operated. An incision was made on each side behind the malleolus in a curved direction, and then another vertical one to allow of the removal of the os calcis. Recovery, with a useful foot at the time of the record, is said to have resulted. ('Med. Times and Gaz.,' ii, 1869, p. 125.)

Mr. Dearden records a case of excision of a part of the external malleolus, os calcis, and astragalus. The foot was exceedingly useful afterwards. ('Lancet,' Aug. 6, 1870.)

Resection of tarsal bones.—Dr. Lehmann, of Polzin, describes in the 'Deutsche Klinik,' No. 1, 1870, a case in which he removed the entire os calcis, the astragalus, and the scaphoid bone, and where a useful foot was preserved to the patient. The extirpation of the os calcis where other neighbouring bones are diseased or destroyed has been disapproved of, especially by Dr. Heyfelder, who has founded his objections on the results of twenty-six cases in which either a recurrence of the disease took place or the foot was left too short to be useful. It appeared to Lehmann, however, that the operation might be successful if the periosteum were left in connection with the soft parts, the diseased portions of bone being entirely removed. He undertook the operation in the case of a labourer, æt. 40, who was suffering from caries of the tarsal bones, and had the satisfaction of seeing the patient not only recover, but preserve a useful foot. The following is a description of the operation:—*First stage.*—The cutaneous incision commences at a point at the outer surface of the os calcis, corresponding to the articulation between it and the cuboid bone; it is then carried backwards along the lower edge of the outer side of the foot, then passes obliquely over the part of the heel corresponding to the outer edge of the tuberosity of the calcaneum, passes along the lower edge of the inner side of the foot, and ends about two inches below the inner ankle. Its shape is thus that of a sickle. *Second stage.*—The soft parts are separated from the bones. To effect this the plantar flap marked out by the incision is, with the periosteum, separated from the under surface

* Mr. Little performed a primary excision of the ankle-joint in 1868, in a man, æt. 47, suffering from compound dislocation, at the London Hospital. The patient recovered well, and has now, at the end of two and a half years, a very useful foot. He can bear his whole weight on it.—Ed.

of the os calcis; then the skin, with the periosteum and the peroneal tendons, are loosened from the outer side of the os calcis; the skin of the heel is then raised, with the periosteum and the tendo Achillis; and lastly, the integument of the inner side of the foot is separated, with the periosteum, from the os calcis. In similar manner, proceeding round from without inwards, the skin and periosteum are separated from the astragalus. *Third stage.*—The bones are removed. For this purpose the joint is opened at the outer, posterior, and inner parts, and, finally, in front, the heel being drawn downwards and the knife introduced from behind. By drawing down still more the os calcis and astragalus, the scaphoid bone is brought within reach, and is denuded of its periosteum. The joints between the os calcis and cuboid bones, and between the scaphoid and cuneiform bones, are then opened, and the bones are removed. The lateral parts of the flap are united by sutures, the hinder part being left open to allow the escape of pus. The wound is dressed with charpie, and the foot is either put up in a fenestrated plaster of Paris bandage or in a wooden splint with an opening at the heel. In Lehmann's case the result was the following:—Suppuration ceased eight weeks after the operation, and four weeks later, *i. e.* three months ofter the operation, the foot had a perfectly sound appearance. The man could use it in the same way as a healthy foot, without the use of a stick and without lameness.

Excision of the elbow.—Mr. Maunder ('Lancet,' Jan. 2, 1869) notes that of seven cases in which he performed primary excision of the elbow-joint two died. In one of these there was also compound fracture of the skull, and in the second the cause of death was pyæmia. The other five recovered with useful limbs; flexion, extension, supination, and pronation, being secured to all in varying proportions.

A case of subperiosteal resection of the elbow by Mr. Stokes is noted in 'Dub. Quart. Journ.,' Feb. 1870.

Excision of olecranon ulnæ.—Mr. Birkett, in a case of disease of the olecranon following a blow, made a longitudinal incision over the back of it, opened the elbow-joint, sawed off the olecranon only, and then dressed with wet lint. In three months the patient, a man, æt. 19, had the wound healed, with a stiff and swollen elbow. In another five months the joint was quite well. There was some slight movement, and the joint was strong and useful. ('Lancet,' March 27, 1869.)

Excision of the hip.—In the 'Medical Times and Gazette, April 3, 1869, Dr. R. R. Good compares the relative mortality after excision of the hip in England and in France. He gives statistics of thirty-two cases in England, of which eleven died, and of fourteen cases in France, of which twelve died. He thinks the French surgeons leave the operation till it is too late.

Excision of the knee.—Mr. Pemberton insists on the want of growth following excision of the knee in children, and on the flexion which often occurs, after some time, in cases in which there was every evidence of firm bony union having occurred. ('Lancet,' July 9, 1870.)

Mr. Wagstaffe describes a specimen of bony union after a successful excision of the knee-joint. ('Path. Trans.,' xx, 264.)

Dr. Pénières has collected in the 'Gaz. des Hôpitaux,' No. 123, 1869, the statistics of nearly 600 cases of excision of the knee.

Mr. Sydney Jones relates three cases with the result of useful limbs, in adults. He gives illustrations. ('St. Thomas's Hospital Reports,' 1870, p. 435.)

Dr. Gillespie operated successfully on a miner, æt. 22, for chronic disease. The patient returned to his work for seven months, and then wrenched the limb, causing it to swell and become painful. After prolonged rest he again improved, and was then employed as a railway gate-keeper. Eighteen months later, he again came under his care. There was great mobility of the knee and atrophy of the limb, necessitating amputation. The limb had been decidedly useful to him for three years and four months. Dr. Gillespie remarks on the prospect of usefulness when the patient left the hospital, and the failure of bony anchylosis under the severe strain of a miner's occupation, which is particularly unfavorable for a man with a leg incapable of flexion. The knee, on examination, showed no trace of bony union. The ends of the femur were rounded off, and connected by fibrous tissue to a cup-shaped cavity in the head of the tibia. ('Brit. Med. Journ.,' Aug. 14, 1869)

Excision of the os calcis.—Mr. Canton excised the os calcis of a girl, æt. 16, for caries, with success. He made an incision over the calcaneo-cuboid joint, extending midway into the sole of the foot, then longitudinally backwards over the posterior surface of the os calcis, as high as the tendo Achillis. The flap was then removed from the outer side, the tendo Achillis divided, and the dissection continued close to the bone on the inner side. The ligaments were then divided, and the bone removed. The disease was confined to the os calcis. The notes are given too early to state the ultimate result. ('Lancet,' Jan. 30, 1869.)

Mr. Holmes exhibited a specimen of disease of the os calcis, from a a young woman, after excision. He had previously tried gouging. The disease was limited to the one bone. ('Path. Trans.,' xxi, p. 304.)

A case, under the care of Mr. Tibbits, is noted in the 'Brit. Med. Journ.,' Sept. 25, 1869. The patient, a little girl, had had the whole os calcis removed. She could walk on the foot, and there was very little deformity. The other os calcis was diseased also, had been gouged, and was not quite sound at date of note.

Subperiosteal excision of the os calcis.—Mr. Annandale removed the os calcis of a girl, leaving the periosteum, and the wound healed in ten days under antiseptic treatment. Reproduction of bone occurred, so as to render the foot useful in progression. ('Edin. Med. Journal,' June, 1869, p. 1128.)

It is reported in the 'Lancet,' Feb. 19, 1870, that M. Giraldés, on performing excision of the os calcis in a boy, remarked that the whole of the bone may be removed and yet the patient subsequently recover

the entire use of the foot. He has had one very successful case; the calcaneum was removed *in toto*, and the child, who has since grown up, is now at school, with quite a new bone developed in the periosteal tissue.

Removal of the os calcis.—M. Polaillon, Professeur-agrégé in the Faculty of Medicine in Paris, examines elaborately, in the 'Archiv Génér. de Méd.' for Sept. and Oct. 1869, the operation of excision of the os calcis. He collects notes of 55 cases, in which the results are known, 39 being successful, and 16 unsuccessful. Death was the direct result of the operation in 3 cases only; in 7 cases secondary amputation was required, and was followed by death in 2; while in 6 other cases the limb, left after the operation, was more or less useless. Polaillon sums up his remarks in the following conclusions.

Extirpation of the os calcis ought to be a recognised operation, inasmuch as it allows the preservation of a very useful part, both for standing and for walking. The success of the operation varies, especially with the age of the patient. In children and adolescents it is successful in eight cases out of nine, and the results, as regards the subsequent utility of the limb, are excellent. In adults it fails in half the cases, and when it succeeds its results are less successful than in children. The foot, in fact, accommodates itself but imperfectly to the loss of the calcaneum at an age when the growth of the skeleton is completed. In cases of disease of the os calcis extirpation of the bone should always be preferred to amputation in children and adolescents, but in adults amputation is the better operation. In the latter, a stump will generally furnish a more solid *point d'appui* than a foot deprived of the os calcis. It must, however, be borne in mind that the risk of death is much greater after amputation than after excision, and that in certain conditions the latter operation may procure a successful result with much less danger to life. When disease of the hinder part of the foot obstinately resists treatment by rest and local applications, the surgeon should ascertain whether the os calcis alone is affected, or the disease extends to the neighbouring parts and to the ankle-joint, and in the former case the diseased bone should be extirpated. When the limits of the disease cannot be ascertained, either by methodical examination, by the amount or nature of the disturbance of functions of the part, or by the progress and history of the case, the idea of excision should not be abandoned. Every preparation having been made for the operation, an exploratory incision should be made in such a way that the surgeon may either remove the os calcis, excise the tibio-tarsal joint, or amputate the leg. In cases of comminuted fracture of the os calcis by gunshot wound or other cause, with wound of the integument, extirpation will probably be necessary, because the osteitis generally takes the form of caries. Before proceeding to operation the surgeon generally waits for evidence that the wound in the bone is not likely to heal by granulation. In caries of the centre of the calcaneum, not yet affecting the articular surfaces, the proper operation is removal of the whole of the diseased portions. In peripheric caries, attended with suppuration of the calcanean articulations, the bone must be disarticulated, and

the corresponding articular surfaces scraped and cauterised. If, however, the caries have extended deeply into the astragalus and the cuboid and scaphoid bones, amputation at the tibio-tarsal joint should be at once performed. Total necrosis and phlegmonous periostitis are the diseases in which extirpation of the os calcis is most successful; this is because the periosteum is raised from the bone by the suppuration, and the operation is reduced to the simple removal of a sequestrum. In cases of this kind reproduction of the bone has taken place. The growths which indicate extirpation of the calcaneum are, chiefly, enchondromata or fibromata; cancer is very rare. At first, cancer affecting the os calcis is too limited to be recognised; and, when it has become capable of diagnosis, no other operation than amputation can prudently be performed. The presence of fistulæ or small ulcers, or of inflammatory induration of the skin of the heel, do not contra-indicate excision. But in very extensive ulceration of the skin, the changes produced in it by a cancerous tumour, or even considerable thinning of the skin by a non-malignant tumour, contra-indicate excision. Even if it were followed by recovery, the patient would have to walk on a cicatricial surface. In all cases operation should not be too long delayed. The extent of wound required in the operation is small, and allows of its performance even in subjects worn down by long disease.

Excision of the scapula.—Mr. Pollock narrates two cases of excision of the scapula, without the sacrifice of the arm. The first case was that of a girl, æt. 16, suffering from a large tumour, which proved to be malignant. The acromion was sawn through near its base, and was left attached to the clavicle. She recovered well from the operation, but died at the end of twelve months with recurrence of the growth. The second case was that of a man, æt. 47, also the subject of a malignant tumour. The whole of the acromion and part of the clavicle were removed. He was suffering from bronchitis at the time, and this increased after the operation. He died five days later. No trace of malignant disease was observed in the lungs at the post-mortem. Reference is made to recorded cases, and the question asked, what is the best means of removing the scapula? In ordinary cases the incisions practised by Mr. Syme, viz. one across the upper surface, and another midway from this to the lower angle of the bone or edge of the tumour. In the subsequent stages Mr. Pollock, however, departs from Mr. Syme's practice. "Instead of attempting to detach the muscles of the anterior border in the first stage of the operation, I have, in both instances, liberated the posterior border in the commencement, then the inferior, and then turned up the bone from below upwards. This proceeding allows a finger to be readily passed under the subscapular artery before it is divided, so that, when divided, it can be at once secured without the loss of any blood from that artery." Then the remaining structures can be rapidly cut through and the separation of the tumour effected. At the time of carrying out this plan the author was unaware that Sir W. Fergusson had also preferred it. "If the subclavian be successfully compressed during the operation, the surgeon has nothing to fear from hæmorrhage, *provided he avoids cutting*

into the diseased mass." Mr. Pollock thinks it better to leave a portion of the acromion or the whole of it, and also the coracoid process, unless diseased. If a portion only of the scapula be removed it should only be the lower portion, as the hæmorrhage is greater than when the whole is removed. "In making incisions for the removal of a very large tumour here or elsewhere, the surgeon may economise blood by taking the following precautions:—In the first place, the incisions should not be larger than he requires for the time." "More skin than requisite should not be saved for the flaps." That which is not required should be left attached to the tumour. Lastly, the tumour itself should not be cut into. ('St. George's Hosp. Rep.,' iv, p. 223.)

Dr. M. Schuppert records ('New Orleans Journ. of Medicine,' Jan. 1870) a case of tumour of the scapula in which he removed the whole bone, except the tip of the acromion, which was sawn through. The growth was osteo-enchondromatous. The patient recovered well, and, it is said, could "lift a weight of thirty pounds and throw it a fair distance." ('Am. Journ. Med. Sciences,' April, 1870, p. 578.)

Excisions of joints.—In the 'Medico-Chir. Trans.,' vol. lii, p. 1, are narrated three cases of excision of the hip, followed by recovery and more or less usefulness of the limb, under the care of Mr. Lee; twelve cases of excision of the knee in children or young adults, 10 patients recovered and 2 died; one case of excision of the shoulder in an adult male, followed by recovery; and two cases of excision of the wrist.

In the same volume (p. 13) Dr. Humphrey records the results of 39 cases of excision of the knee. In 28 cases, recovery followed; in 2, death; in 9, amputation was resorted to secondarily, and of these, 5 recovered and 4 died. In a foot-note six other cases are added, with five recoveries and one under treatment, making a total of 45, with 33 recoveries.

Mr. Gant has communicated a series of cases of excisions of knee, hip, and elbow to the Med. and Chir. Soc.; of twenty operations, not one had terminated fatally. ('Med. Times and Gaz.,' &c., May 28, 1870.)

Dr. Cheever narrates 28 cases of excisions of the larger joints, with a mortality of 43 per cent. Of the elbow there were 10 cases; 4 for disease (1 amputated, 3 successful), 6 traumatic (2 died, 1 after amputation; 4 recovered, 2 successful and 2 amputated). Of the hip there were 11 cases (7 recovered and 4 died); 9 of them were in children, with 2 deaths (from tubercular meningitis and tubercle), 5 walk well, 1 walks with crutches, and 1 is still in bed. Of the knee there were 6 cases, all for disease. Two were amputated, 1 died, 3 recovered with more or less useful limbs. Three were children and 3 adults. Of the former, 2 recovered without amputation, and 1 of the latter. A table of the cases is given, and several illustrations. ('Boston City Hospital Reports,' 1870, pp. 71—107.)

Resection of the ribs.—In the 'Gazette Médicale de Paris,' Nos. 3

and 6, 1869, will be found a learned and exhaustive paper on resection of the ribs, by M. Demarquay.

Resection of the wrist-joint.—Dr. Gillespie notes two cases in which he performed excision of the wrist. He practised one incision in the middle line of the dorsal aspect of the wrist, about three inches long. The skin was first dissected a little to each side, and the joint opened on the outer side of the extensor tendons of the fingers. These and the extensors of the thumb were held out of the way by hooks, and the extremities of the ulna and radius exposed and removed. The carpal bones were next attacked and dug out, partly by means of the scalpel and partly by the scraper, the palmar relations being very slightly disturbed. Any portions of the metacarpus requiring it were then dealt with. The wound was subsequently dressed antiseptically. Woodcuts of the condition of the wrists about ten weeks after the operations are given, and in the first case (that of a young woman) a specimen of the handwriting about four months after the operation. The second case was that of a little girl six years old. "The power of movement of the fingers and thumb quickly returned, and with still more freedom than in E. L.'s (the first) case." ('Edin. Med. Journ.,' Dec. 1870.)

Dr. Watson has practised a radial incision for excision of the wrist. ('Edin. Med. Journ.,' Sept. 1870.)

Subperiosteal resection of the lower jaw.—Dr. R. Gritti, of Milan, has devised and described an operation for removal of the lower jaw. A translation of his essay on the subject is given in the 'Wiener Med. Wochenschr.' for Feb. 19, 1870. He says that three principal methods have been proposed—first, that of Dupuytren (1812), characterised by large incisions through the skin; second, that of Signoroni, named by him subcutaneous, in which the bone was removed through the mouth; thirdly, that of Larghi (1855), who made the cutaneous incision of the French, and removed the bone subperiosteally. Pallavacini has endeavoured to combine the methods of Signoroni and Larghi, so as to remove the bone by subperiosteal section through the mouth. The method proposed by Gritti is as follows. A vertical incision, about two centimètres long, is made about one and a half centimètres in front of the posterior border of the ramus of the lower jaw. The incision is carried through the skin and fasciæ, and the anterior border of the parotid is pressed back by the point of the finger. No harm, however, is done if the surgeon at once divide the soft parts down to the bone. Much hæmorrhage is not likely to occur; the Stenonian duct lies too high for a fistulous opening to be formed in it; some branches of the facial nerve are indeed in danger, but experience has shown that the paralysis produced by their division disappears in time. After the incision has been made the patient's mouth is opened sufficiently wide to allow the forefinger of the left hand to be introduced. With the right hand a strong curved chain-stitch needle is passed round the hinder border of the ramus, carried along its inner surface, and brought out at the anterior edge through the mucous membrane of the cheek,

near the last molar tooth. The end of the chain-saw is then carried into the mouth by means of the needle, and, the small opening in the mucous membrane having been slight enlarged, and the skin and mucous membrane being protected by spatulæ, the bone is sawn through. The mucous membrane of the alveolar edge of the portion to be divided is then cut through, and the membrane with the periosteum is raised from the bone by means of curved and straight raspatories. The bone is then divided at the other end of the portion to be removed. If this be in the vicinity of the incisor teeth, the best plan is to cut through the jaw with Signoroni's bone forceps. If the bone must be divided further back, a small vertical incision should be made in the skin to allow the passage of a narrow or chain-saw; but if the disease extend as far back as the posterior molars, the operation which was done on the other side should be repeated. When the bone has been completely sawn through, it is readily removed through the mouth by bone forceps. In this operation no artery of any importance is injured, with the exception of the dental, which, in cases of phosphorus necrosis, is generally already rendered impervious by disease. If hæmorrhage should occur, the actual cautery should be applied. Gritti relates one case in which he performed this operation on account of phosphorus necrosis, in a young woman aged 21. The patient died on the eighth day of erysipelas; effusion into the cerebral ventricles was also found after death. There was little or no inflammation in the parts operated on.

Changes in limbs after resections.—M. Sédillot describes the condition of the lower extremity of a boy, the head of whose femur he had excised four years previously. The method of operation he adopted enabled him to save the ligaments and to saw the head of the bone in the acetabulum without previously dislocating it. Since the operation the child (a boy of thirteen) had had excellent use of the limb. Flexion, extension, adduction, and rotation were as perfect as on the healthy side. Abduction alone was diminished. On placing the hand on the trochanter it was easily felt that a joint had been formed at the upper edge of the old articulation. The limb is slightly atrophied in its whole length, but the patient walks and runs with freedom on tiptoe without any raised shoe. Two months after the operation the shortening was less than an inch. Four years afterwards the shortening had increased to three inches. The femur, between the great trochanter and the knee, was one inch shorter than the other, and the leg had undergone a similar shortening. The resection of its head seems, therefore, to have exercised no direct shortening influence on the femur, as the leg from which no bone was removed lost as much length as the femur. Want of exercise had probably been the cause of the relative shortness. A case operated on, in 1858, by Dr. Saire (Sayre ?), and seen again fourteen years after, exhibited a shortening of little more than half an inch, proving that in it the growth of the limb had not been interfered with. This case and others will be found in the work of Dr. Good. He gives statistics of 112 cases of excision of the hip. Of the whole, 52 were cured and 60 died. The proportion of deaths is, in France, 85·71 per cent.; in Russia, 66·67; in Germany, 64·71; in America,

44·83; in England, 34·37. Of twelve cases of this resection, operated on in Paris, all died. Two cases, in the same period, operated on at Strasburg, were successful, the only ones in France that were so. ('Gaz. Méd. de Paris,' No. 28, 1869, and 'Ed. Med. Journ.')

Removal of the tongue.—In the 'Brit. Med. Journal,' Nov. 5, 1866, are recorded five cases of removal of the whole tongue by Mr. Nunneley (Leeds). In the 'Lancet,' Jan. 9, 1869, is a note on seven other cases operated on since then by Mr. Nunneley; they were all successful. Latterly the details of the operation had been modified slightly. A sharp-pointed blade, curved on the edge, about four inches long, and having in the broad end an open eye carrying the wire rope of the écraseur, is passed about midway between the jaw and the hyoid bone, but rather nearer the former, and exactly in the median line, into the mouth, and is brought out at the frænum linguæ and as near the tongue as possible, and the blade removed. The loop of the wire is passed over the tongue, which is drawn out of the mouth as far as possible by Lüer's tongue-forceps, and is pushed as far back as necessary by an instrument slightly curved to accommodate itself to the tongue, and having two branches, at the end of each of which is a notch to receive and push backwards the wire. By this means the latter is kept in position, and may be fixed to any part of the tongue, even to its extreme base. The loop is then held until the screw of the écraseur has been tightened so as gently to fix the rope. Up to this point there has been but little pain, and the voluntary efforts of the patient have materially assisted. He may now be put fully under chloroform; the screw of the instrument is steadily and deliberately tightened and the tongue gradually cut through. Twice only has there been any hæmorrhage, and in both cases the tongue was unusually soft and cut through too quickly. A ligature stopped the bleeding. Each of the three last cases left the hospital about the tenth day.

In his address before the British Medical Association Mr. Nunneley stated that he had removed the entire tongue by his method nineteen times without a single untoward occurrence, and that Dr. Fenwick, of Montreal, had operated on two occasions successfully.

Mr. Christopher Heath ('Lancet,' Jan. 16, 1869) records a case of cancer of the tongue and floor of the mouth in a man aged 60. The lower jaw was divided in the median line, and the growth removed by the écraseur. The man recovered, but the same difficulty was met with as in other cases operated on in a similar way, that the jaw would not unite for some time. He left the hospital in about three months.

A case of removal of the whole tongue is recorded by Mr. Reid, of Geelong, in the 'Lancet,' Oct. 23, 1869. The lower jaw was divided. The jaw united well and quickly. The patient died in rather more than six months of extension of carcinoma.

Mr. MacGillivray has removed the whole tongue successfully for epithelioma. He divided the lower jaw. At the end of ten weeks the union of the jaw was firm, but not quite solid. Pressure with the fingers did not detect any mobility, but when he depressed and elevated the jaw there was seen to be a little lateral movement, as shown by the

alteration in the width of the gap between the incisors. ('Australian Med. Jour.,' Oct. 1870.)

Dr. Buchanan relates three cases in which he removed one lateral half of the tongue successfully. A median incision was made beneath the jaw, the latter was then sawn through, the halves separated, the tongue drawn out, and the affected half removed. He states that another case on which he operated in 1865 is still alive. ('Edin. Med. Journ.,' Nov. 1870.)

Sub-aqueous operations.—Prof. Gritti advocates the performance of certain operations under water ('Annali Universali di Medicina,' Feb.). An abstract is given in 'Med.-Chir. Rev.,' July 1870.

Displacement of superior maxilla.—Dr. Cheever writes on "displacement of upper jaw" for removal of naso-pharyngeal polypi, &c. Following Langenbeck and others, he has lifted up the upper jaw, removed the tumour, and then replaced the jaw. He did this twice on the same patient successfully. In another case he lifted up both superior maxillæ, but the patient died. ('Boston City Hosp. Rep.,' 1870, pp. 156-176; an illustration is given.)

Thoracentesis.—Mr. Berkeley Hill exhibited to the Clinical Society ('Trans.,' vol. iii, p. 72) three patients on whom he had operated for thoracentesis. He thought that this operation had not received sufficient attention in the treatment of serous and purulent effusions. He insisted on the following points:—(1) The removal of fluid from the pleura need hardly ever cause much danger or suffering. (2) Whenever effusion is copious, it is prudent to withdraw it, to relieve dyspnœa and ward off a sudden fatal termination. (3) The usual mode of leaving chronic effusions to natural absorption may be advantageously replaced by tapping whenever the condition of the patient is stationary and the pyrexia abated; the longer the fluid has existed the more urgent becomes the need for tapping, to enable the lung to expand before it has lost the power of doing so. (4) After tapping serous effusions the wound should always be closed, at least until repetition of the evacuations had showed that cure would not be so effected; then injection of iodine or other irritants should be added to the tapping, but in these cases the admission of air should be scrupulously avoided. (5) Where the fluid is purulent the admission (of air) is immaterial, provided a free and continuous exit is maintained for the pus, and this free drainage is a cardinal point in the cure. One case illustrated the benefit from continued drainage by a tube passed across the chest (on one side) through two openings; the second, the benefit which even cases of long-standing empyema, where the cavity will not contract, may obtain from frequent washing out with tepid water or other injections. The third showed how readily a serous effusion may be absorbed even during the progress of rapid pulmonary phthisis, and in this case evacuation gave temporary relief to a considerable extent, though it did not cure the effusion. Dr. Douglas Powell showed ('Trans.,' vol. iii, p. 240) a branched trocar connected with tubing so as to form a syphon, to which is attached, by means of a T

tube, a mercurial pressure-gauge, the objects of this addition being to ascertain the fluid pressure within the chest, and to inform the operator as to the degree of negative pressure obtained at different stages of the operation and its effects upon the respiratory movements. An early operation was strongly advocated, and the steady treatment of cases of effusion from the first. Repeated tappings, with the employment of an amount of syphon power adapted to the case, also injections of iodine or other fluids, if necessary, should be adopted in cases of chronic empyema. He greatly deprecated the admission of air as having (1) a dangerous tendency to set up suppurative pleurisy; (2) as, on mechanical grounds, rendering expansion of the lung impossible during its presence. Dr. Burdon-Sanderson considered a free opening of paramount importance, but one was as good as two. Dr. Anstie was also of opinion that early evacuation should be practised. Dr. Silver pointed out that Dr. Powell's trocar had been used at Manchester and given up, as it was liable to be clogged. ('Lancet,' Feb. 5, 1870.)

M. Dupré has operated seventy-six times. He thinks the trifling operation prevents the accidents likely to arise from the accumulation of the fluid, &c., without adding anything to the danger of the case. Of these seventy-six cases, sixty-eight resulted favorably; in eight, death occurred. ('Gazette des Hôpitaux,' No. 37, 1869.)

In the report given to the Medical Society of the Hospitals, on the diseases most prevalent in Paris during the two months of March and April, M. Besnier has noted the result of paracentesis in pleurisy. In twenty-five cases the operation had been performed fourteen times, always with success. The patients treated in this manner recovered more rapidly than those did in whose cases the effusions were too limited to warrant the operation. ('Gazette Médicale de Paris,' No. 23, 1869.)

Tracheotomy for croup, &c.—Mr. Annandale, in showing three children on whom he had performed tracheotomy, for croup, advocated making the opening as low down as possible ('Edin. Med. Journal,' June, 1869, p. 1130). At the St. Eugénie Hospital, of fourteen cases of diphtheria, all died, and in one only was the operation omitted. Broncho-pneumonia was the cause of death. Under the care of M. Bergeron, out of six cases of croup, one only survived, a child four years of age, treated with cubebs; the other five were operated on and died. At the Children's Hospital five cases of croup were operated on. One was cured, and one remained under treatment. At the St. Antoine two cases of croup operated on died ('Gazette des Hôpitaux,' No. 36, 1869). M. Barthez, during March and April, had thirteen cases, eleven of which died. M. Bergeron, out of nine, had three successful ones. M. Roger lost all seven of his cases; one, however, died of fever, caught in the hospital ('Gazette Médicale de Paris,' No. 23, 1869). For croup, four cases recovered and five cases died. For other causes, five recovered and one died ('Boston City Hosp. Rep.,' 1870, p. 504).

Removal of a shawl-pin by tracheotomy.—Dr. Reeve was called to see a child who had swallowed a "shawl-pin." There was great difficulty of breathing, and the left side of the chest clearly received no air. In

all probability, the head of the pin was impacted in the left bronchus. After waiting some time the operation was performed, and a pin, three and a quarter inches in length, was withdrawn. A figure of the pin is given. The child nearly died during the operation, but recovered well. ('Amer. Journ. Med. Sciences,' Oct. 1869.)

Removal of foreign body from larynx.—A boy, ten years old, swallowed a penny while playing, and though a probang was passed, it could not be dislodged from its position. He remained with more or less difficulty in breathing, cough, &c., for six years, when, on laryngoscopic examination being made, "a bright metallic-looking line," evidently the penny, impacted in the posterior wall of the upper cavity of the larynx, was clearly seen. The penny was removed with forceps. Under the care of Dr. Cameron. ('Liverpool Reports,' iv, p. 181.)

Subcutaneous section of the neck of the thigh-bone.—Mr. Adams gives a summary of the different plans hitherto adopted for the relief of a firm anchylosis of the hip-joint at an acute angle. Dr. Barton divided the femur "between the two trochanters," and obtained a restoration of the straight position, and also useful motion for seven years, when anchylosis occurred. Dr. Sayre removed a piece of bone from between the trochanters, obtaining "an artificial joint" and useful limb. It occurred to Mr. Adams that a much more simple operation might be performed, by the subcutaneous division of the neck of the femur, about its centre, within the capsular ligament, using for this purpose only a long tenotomy knife, and a very small saw constructed for the purpose, with an inch and a half cutting edge, and a long, thin shank, like a tenotomy knife. Mr. Adams put this plan into action (Dec. 1, 1869) in the case of a young man, æt. 24, affected with extreme deformity at the hip-joint. Forcible extension under chloroform having failed, a tenotomy knife was entered a little above the top of the great trochanter, and carried straight down to the neck of the thigh-bone, the muscles divided, and the capsular ligament opened freely. The knife was withdrawn, and a saw (three eighths of an inch in width, with a cutting edge an inch and a half in length, at the end of a slender shank three inches in length) was carried along the tract straight down to the bone. This was sawn through obliquely from above downwards and inwards. No hæmorrhage followed, and a compress of dry lint, a plaster, and a bandage, were applied. The limb moved freely in all directions, but before it could be brought into a straight position it was necessary to divide the tendons of the long head of the rectus and of the adductor longus muscles, and to cut through the tensor vaginæ femoris. The limb was fixed in a straight position, and bandaged to a long interrupted Liston's splint. No inflammation whatever followed the operation, no swelling nor redness of the skin nor any deep suppuration, but the wound healed slowly. On the thirteenth day motion was encouraged, and continued for a fortnight, but the hip became painful, and it was determined to abandon all idea of obtaining motion. The man was confined to bed (he had been getting about with crutches) and a weight applied. At the end of three weeks anchylosis appeared to have en-

sued. On Nov. 10, 1870, eleven months after the operation, it is noted that the man could walk three or four miles with ease, and did not require a stick for walking purposes, although he always used one to improve the general balance of his body, which was somewhat disturbed by spinal curvature. Figures of the deformity, of the instruments, of the seat of section, and of the result, are given ('Brit. Med. Journ.,' Dec. 24, 1870). There is also a note appended of the case of a young woman on whom Mr. Jessop operated successfully. The operation has also been performed by Mr. W. Jowers and by Mr. Furneaux Jordan. The patient in the latter case was a young woman, æt. 16. The adductor longus and long head of rectus required tenotomy. The result promised to be successful.

Division of femur for bony anchylosis.—Mr. Erichsen has cut through the femur of a young woman, for anchylosis of the hip, after the plan of Drs. Bauer and Sayre. The head and neck had been absorbed, and greater part of the acetabulum. The bone was sawn as close to the pelvis as possible. A large longitudinal wound was left down the outer part of the thigh, but the patient promised to do well. ('Lancet,' March 20, 1869.)

Removal of the rectum, prostate, and base of the bladder; recovery.—Professor Nussbaum, of Munich, relates a remarkable case of this kind in No. 44 of the 'Baier. Aerztliches Intelligenzblatt' for 1869. Already, in 1863, he had described, in the same journal, several cases in which he had successfully operated on the rectum on account of cancer, although the bladder or the vagina was involved in the disease. In all these cases the patients, who had been near to death, survived for months, or even years, without suffering, until a return of the disease put an end to their lives.

In October, 1866, Nussbaum was consulted by a master smith, who had not had a stool for sixteen days. He was unable to bear a clyster, and was greatly reduced by hæmorrhages from the rectum; he also frequently passed blood in his urine. An examination of the rectum was made with difficulty, on account of the presence of a cancerous stricture. It gave rise to much hæmorrhage from both the rectum and the bladder. Nussbaum ascertained that the patient had cancer of the rectum, and that a part of the urethra, the entire prostate, and a portion of the neck of the bladder, were involved in the disease. The patient was desirous of having the diseased mass removed, but, on account of its great extent, Nussbaum at first declined to comply. At last, however, the patient refusing to bear any further attempts at dilatation, on account of the pain which they produced, Nussbaum operated in the following manner:—The patient having been placed under the influence of chloroform, a semilunar incision was made round the anus on both sides. The muscular fibres of the sphincter, which remained healthy, were pushed aside, and the finger was passed up to the extent of four inches. Here it reached healthy, loose, elastic connective tissue surrounding the rectum, except in the anterior fourth, where the bladder and the prostate were involved in the cancerous mass. At this point Nussbaum cut through the adherent portion of the prostate with

the urethra contained in it. Much hæmorrhage followed, and four arteries were tied. The sound part of the rectum was now drawn down to the external wound and freed from the cancerous portion, in doing which a large quantity of solid fæces was removed. The healthy intestine was then attached to the skin by ten sutures, and four other sutures were applied to the remaining part of the wound, an elastic catheter having been first introduced through the perinæum into the bladder. The healthy part of the rectum was dilated to double its normal size; the cancerous portion was reduced to the size of a pencil, and contorted. It was impossible to distinguish, in the cancerous mass, the limits of the rectum, prostate, and urethra.

For some days after the operation there was violent reaction. The temperature was 104° Fahr., the pulse 130-140. The urine escaped through and alongside the catheter, through the wound in the perinæum; it contained blood, and was very offensive. The patient being at last unable to bear the catheter, Nussbaum removed it, with much benefit. On the eleventh day after the operation all the sutures were removed. A solid valvular communication had been formed between the bladder and the rectum, through which urine passed into the intestine, but fæces did not enter the bladder. Every two or three days there was a solid fæcal evacuation; clear urine escaped through the rectum every twenty or thirty minutes. No urine passed through the wound after the nineteenth day. The operation was performed on October 14th. In the fourth week the patient was able to sit up for an hour each day, and in December he left Munich. Three months afterwards he visited Nussbaum, and was then apparently strong and healthy. In 1869 he again saw Nussbaum, and was still contented with his state. He was, however, obliged to void urine at least every hour. If this were not done, the urine escaped in drops by the anus. During the previous year, however, he had been able to retain his urine for two or three hours at a time. On examination Nussbaum discovered that there were signs of a recurrence of the disease. The patient soon lost flesh, and at last died, after repeated attacks of hæmorrhage.

Subhyoid pharyngotomy.—At a meeting of the Berlin Medical Society in December, 1869, Professor Langenbeck described an operation for opening into the pharynx through the thyro-hyoid membrane. The operation had been already proposed by Malgaigne in his 'Manuel de Médecine operat.,' and by Vidal in his 'Traité de Pathologie externe;' but neither of these surgeons appear to have performed it. After describing the anatomical arrangement of the parts, Langenbeck points out that an incision in this region, just above the thyroid cartilage, opens the pharynx, and may be made for the following purposes:—To remove from the pharynx foreign bodies which cannot be taken out through the mouth, and whose presence in the pharyngo-laryngeal pouch has been clearly ascertained; to remove tumours of that portion of the pharynx having a broad base, or arising in the wall of the pharynx between the mucous and muscular coats; to remove new growths from the epiglottis, aryepiglottic ligaments, and arytenoid cartilages. In performing the

operation a preliminary tracheotomy should always be first done, and a canula fixed in. An incision, five or six centimètres long, is then to be made parallel with the lower edge of the hyoid bone. After dividing the superficial cervical fascia and the sterno-hyoid muscles (so far as necessary), the thyro-hyoid membrane is cut through by direct vertical strokes. The mucous membrane of the pharynx, thus laid bare, is divided along the edge of the hyoid bone; the epiglottis is then exposed, and is drawn out by hooks through the wound. During the manipulation the larynx becomes pushed down, so that the space between the hyoid bone and the thyroid cartilage is at least doubled. The posterior surface of the gullet, the arytenoid bodies, the glottis, and the whole throat, are now perfectly seen, and tumours seated on any of these parts may be removed by careful operation. The hæmorrhage which occurs can be arrested by pressure with the finger or by ligature, and the blood may be prevented from entering the larynx by means of a piece of sponge introduced into the wound and pressed down on the glottis until the operation is completed. The operation having been completed, the edges of the wound are to be brought together with sutures, and the head kept bent forwards. Until the wound is healed the patient must be fed through an œsophageal tube, and respiration must be carried on through the canula.

Acute meningitis after operations.—In the 'Wiener Medizinische Wochenschr.,' Nos. 1 and 2 for 1869, Dr. Billroth, of Vienna, calls attention to a sequel of surgical operations which he has not seen noticed by surgical writers, and of which he has not heard orally, viz. acute meningitis and cerebral œdema appearing in cases which were apparently making favorable progress, and causing death in two days. He relates two cases in illustration. The first case was that of a boy æt. 5, who suffered from suppuration in and around the left knee-joint, the result of a fall. On March 11, 1868, Billroth opened the joint, cut and scraped away the diseased parts, and introduced drainage-tubes through abscesses which had formed in the popliteal space and under the tendon of the quadriceps extensor muscle. There was very little bleeding; no secondary hæmorrhage. After the operation the child complained much of pain in the part operated on, which was partially relieved by two subcutaneous injections, each containing one eighth of a grain of morphia. On the morning after the operation the patient had had a tolerably quiet night; the pulse was 152, the temperature 38·6 Cent. (101·7 Fahr.), and he still had much pain. At 8 p.m. of this day—thirty-three hours after the operation—the temperature having risen to 104° Fahr., he was seized with convulsive twitchings of the lower limbs, the pain being exacerbated. After one eighth of a grain of opium had been injected subcutaneously he was somewhat more quiet for a time, but at half-past ten violent convulsions, accompanied with an increase of the pain, took place in all the limbs, and even in the muscles of the trunk. One sixth of a grain of morphia was injected, and produced some relief; but at midnight all the symptoms returned. Soon afterwards he became comatose and died. The total quantity of morphia injected in less than forty hours did not amount to one grain. On post-mortem examination the skull

was found to be thin and compact; the sutures were indistinct, and the parietal especially was closed. The dura mater was distended, and its veins were full of blood; the inner membranes contained a moderate quantity. The cerebral convolutions were much flattened, the sulci were effaced; the brain was anæmic and moist, and of doughy consistence. The ventricles contained each about a drachm of clear serum. At a point, about three fourths of an inch in length, opposite the lower dorsal vertebræ, the spinal cord was softened to the consistence of pap; in other parts the cord was healthy. No trace of tubercle could be found in any part of the body. The second case was that of a lad æt. 16, who had had for three years a bronchocele, which had grown rapidly, and extended to both sides of the neck. It caused dyspnœa, and, as it was probable that it would soon cause death by suffocation, Billroth extirpated the portion on the left side. He had, in many cases before, removed bronchocele in the same way (by ligature and excision) with success. In the course of the night following the operation the patient was seized with violent general convulsions, and, after being comatose about half an hour, died in three hours, sixteen hours after the operation. On making a necropsy the left pupil was found rather narrower than the right. The skull was thick and firm. The right half of the frontal suture was almost obliterated externally, and was indistinct on the inner surface. The dura mater was tightly stretched; the inner membranes contained a moderate amount of blood. The cerebral convolutions were much flattened out. The brain was moderately rich in blood, and was soft and moist; its ventricles, the lining membrane of which was somewhat thickened, contained more than an ounce of flocculent serum. No large vessels or nerves in the neck had been injured in the operation. The trachea was much narrowed. There was emphysema of the lungs and remains of antecedent pericarditis and peritonitis. The heart was healthy.

The results of increased intracranial pressure have, says Billroth, been investigated in late years by von Bruno, Donders, Leyden, Fischer, Niemeyer, and others; and a consideration of the anatomical relations of such pressure may lead to an explanation of the origin and course of the process which proved fatal in these two cases.

Accumulation of mucus within the tympanum.—Mr. Hinton considers that an excessive secretion from the mucous lining of the tympanum is not at all infrequent. Such accumulations present several varieties. The simplest form is the slight and transient hypersecretion which is so frequent an accompaniment of an ordinary cold, and which may have, as its only indication, a somewhat moist or gurgling sound on the inflation of the ear, lasting for a few days and entirely disappearing. Less frequent is a further stage of the same condition, in which, after more or less pain and sensation of fulness in the ear, hearing becomes impaired, and, on examination, the membrana tympani may be seen of a dull, semitranslucent, greyish hue, sometimes slightly bulging and traversed by red dilated vessels, the largest of which descend from the roof of the meatus and enclose the malleus, while inflation of the tympanum, either by the patient or on Politzer's

method, gives a distinct sound of fluid. Intermediate between these two forms, a class of cases is met with in which, though the hearing is impaired or an annoying tinnitus persists, the membrana tympani retains its healthy appearance, and the presence of secretion in the tympanum is made manifest, only, on inflation, by the sound produced, or by the fluid being brought visibly in contact with the inner surface of the membrane. In these cases, when recent, in a fairly healthy patient, simple treatment suffices—counter-irritation, alum spray to the fauces, or syringing through the nostrils some solution of carbonate of soda. The mucus diminishes, the vascularity disappears, the membrane becomes translucent, but may remain relaxed, bulging to excess before inblown air. The author has met with cases in which the symptoms have depended on nervous exhaustion. When the inflammatory action is more severe the membrane may, in a few days, become swollen into a red and fleshy mass of irregularly convex form, in which no trace of its natural structure or of the malleus can be discovered. The presence of fluid is easily detected by the ear, and in one or two weeks the inflamed membrane ulcerates, and gives exit to thick masses of viscid mucus, more or less mingled with pus. In these cases general treatment and attention to the throat suffice. The Eustachian tube must be kept open, and air sent right through daily. There is another class in which the secreted mucus is neither absorbed nor escapes through the Eustachian tube nor through the membrana tympani, but remains in the tympanum. These cases occur in various forms. 1. Catarrh of the tympanum and fauces. 2. A subsequent stage, in which may be left no symptoms except a variable degree of deafness, with or without tinnitus. The membrane is usually concave, and of a dull, white appearance, but at certain parts presents either—(*a*) a yellowish or brownish hue, due to the presence of a dark fluid in contact with its inner surface, not to be confounded with the promontory. (*b*) A *bulging*, of a silvery white or reddish hue, more often seated at the upper posterior part than elsewhere. (*c*) Thinner and more transparent spots, often very much drawn in, but which, on inflation, bulge and are evidently filled with fluid, and sometimes occupy half the membrane. In these cases the only means of relief seems to be the evacuation of the fluid by tapping the membrane as often as necessary. Generally more than once is requisite. Inflation often produces a temporary improvement. The thorough evacuation of the fluid results in the permanent restoration of the healthy state. Cases are given in illustration. The author remarks that when *suppuration* has occurred, the advisability of prompt evacuation has already, but not sufficiently, been insisted on. ('Guy's Hosp. Rep.,' xiv, p. 164.)

Perforation of membrana tympani.—Cases illustrating Mr. Hinton's treatment of perforation are narrated by Dr. Dalby. The cavity of the tympanum was kept cleansed, and the accumulations were removed from time to time. When the ears had been well cleansed by an ordinary syringe, a syringe was used with a nozzle which fitted the meatus, and was defended by a piece of india-rubber tubing. In this way alkaline solutions were sent through the tympanum and Eustachian

tube, passing out through the nose. This was done once or twice a week. After a time, astringent lotions were substituted for the alkaline, five grains of sulphate of zinc to the ounce of water being the one generally employed. The tympana were regularly inflated on Politzer's plan, and astringent lotions, containing a little opium, were poured into the meatus at night. ('Lancet,' April 23, 1870.)

Catarrh of the tympanum.—Mr. Hinton narrates five more cases in which he has practised perforation of the membrana tympani. In all of them the result was favorable. ('Guy's Hosp. Rep.,' xv, 215.)

Electrolysis in treatment of hydatids of liver.—Dr. Fagge and Mr. Durham brought the subject of the treatment of hydatids of the liver by electrolysis under the notice of the Medical and Chirurgical Soc. They had treated eight cases on the plan advocated by Dr. Althaus, and had had excellent results. The positive pole, of a modified ten-celled Daniel's battery, terminating in a moistened sponge, was placed on the abdomen, and two needles connected with the negative pole were passed into the tumour. The current was allowed to pass for ten or twenty minutes, and then the needles were withdrawn. A little clear fluid in some cases appeared at the seat of the punctures. Rapid diminution of the tumours followed. The authors thought that the "subcutaneous tapping" in great measure accounted for the success, and that possibly simple acupuncture might be efficacious. In comparison with "tapping," the authors were of opinion that electrolysis was quite as free from danger to life and from the occurrence of suppuration within the sac. ('Brit. Med. Journ.,' Nov. 19, 1870.)

Removal of subcutaneous tumours.—Mr. Henry Lee described a plan of removing subcutaneous tumours without hæmorrhage or loss of skin by the use of india-rubber thread. He had found that the pressure of the thread would rapidly, by a process of linear mortification or of ulceration, cut through the base of the tumour. The plan might be applied to the surface as well as to the base of any growth that might have to be removed, and was peculiarly applicable to vascular tumours of the neck and face. A crucial line of ulceration was first made through the skin by the continued pressure of india-rubber bands or thread. Needles were then inserted below the flaps of skin thus produced, and the skin was dissected back from the centre towards the circumference, by the pressure of the india rubber. The base of the tumour was then cut through in the same way, so that the whole of it was enucleated without the aid of the knife. The process went on much more rapidly than might be expected, and it was comparatively safe, as the india-rubber thread always, on account of its elasticity, remained tight. The circulation could not consequently be established in a part once strangulated, and so far the danger of blood-poisoning was avoided. ("Report Roy. Med. and Chir. Soc.," 'Brit. Med. Journ.,' July 23, 1870.)

Removal of the thyroid gland by caustic enucleation.—An abstract of

a communication on this subject in the 'Australian Med. Gazette,' Dec. 15, 1869, is given in the 'Med.-Chir. Rev.,' Jan., 1871.

Residual abscesses.—Under the name "residual abscesses" Mr. Paget includes all abscesses formed in or about the residues of former inflammations. Most of them are formed where pus, produced long previously, has been wholly or in part retained and become dry, or in some form "obsolete." But some of them, it is probable, are formed in the thickenings, adhesions, or other lowly organised products of inflammation long past. Suppuration among the products of a former inflammation is probably an illustration of what may be held as generally true concerning many relapsing inflammations, namely, that they are due to the disturbed or interrupted nutrition, not only of the tissues deteriorated in previous inflammations, but of the new materials that were formed among them. Thus, in the frequently relapsing inflammations of testicles and joints, and other parts that one sees in a constantly 'fretful' state, the 'weakness,' 'low vitality,' or 'want of tenacity of composition,' which are indicated by frequent inflammation under very slight provocation, are to be ascribed rather to the remaining products of former inflammations than to the original textures of the parts. Thus, adhesions become inflamed, and residues of pus degenerating under any irritation initiate or take part in a renewed suppuration. Some of the most striking instances are met with in connection with diseases of the spine. In one lady an abscess appeared in the lumbar region, of a large size, six years after the formation of an angular curvature, the abscess probably forming in or about the residue of inflammatory products which had been at rest for six years. Another lady had an angular curvature and psoas abscess, the latter containing probably two pints of pus. She rested for two years, and at the end of that time the abscess, having gradually diminished, had disappeared. She then led an active life for four years, when another abscess formed. This time rest did not prevent the abscess increasing in size, and at last bursting. Another group of cases is found among instances of necroses of the interior of long bones. A woman was admitted with abscess of the head of the tibia. Twenty-eight years before she had had inflammation of the leg in consequence of a fall, and this was followed by exfoliation of several small portions of the upper part of the tibia. The sinuses remained open for five years. She then remained well for twenty years. Three years before she came under care, in consequence, probably, of overfatigue, one leg began to be painful and slightly swollen about the upper part of the tibia, and from this time onward she suffered from fierce attacks of pain. Perforation of the head of the tibia let out some pus. In a girl of thirteen an abscess similar to the above followed an injury five years before. In a young man an abscess of the tibia followed seven years after acute periostitis. "Many other cases might be cited of residual abscesses with histories and characters closely resembling those just related. Thus, in lymphatic glands, left large and indurated after scrofulous inflammation in early life, it is not rare to see many years later fresh inflammation, followed by abscess and

discharge of thick caseous and calcareous matter, the residues of the earlier inflammatory formations." By the side of the rectum a similar rule holds good. In one case an abscess near the cæcum probably discharged after twenty years at the loin and into the colon. The abscesses may form with acute symptoms, "but much more frequently they form slowly and without pain or fever or any other distress." In these cases they acquire great interest from the difficulty of diagnosis. They may resemble bursæ or fatty or fibro-cellular tumours, and only a carefully ascertained history of the case may suffice for their discrimination. On the ground of history, a residual abscess may be suspected whenever a swelling, not altogether unlike an abscess, appears in or near a part that has long previously been the seat of an inflammation, especially if it appears or greatly increases soon after anything has impaired the general health. The treatment does not differ from that of ordinary abscesses; absorption is very rare, and the suppuration ought rather to be promoted. "The healing of discharged residual abscesses is quicker and attended with much less disturbance than the healing of first abscesses of the same size and in similar situations." ('St. Barth. Hosp. Rep.,' v, 79.)

Surgical value of cicatrices.—Mr. Pridgin Teale calls attention to the surgical importance of the fact that tissues dependent on a cicatrix for their blood supply become atrophied. His attention was first called to this by the behaviour of part of a conjunctival growth on the cornea, remaining after the greater part had been removed, and nourished only by vessels passing through a cicatrix. In the course of eighteen months the portion left on the cornea had dwindled and become transparent. Mr. Teale endeavours to show that this tendency to atrophy may be used in the treatment of—(*a*) symblepharon, (*b*) cutaneous nævus, (*c*) subcutaneous nævus, (*d*) rhinoplastic surgery, (*e*) growths encroaching on the cornea, (*f*) syndectomy; also in cases of tumours not amenable to extirpation by ordinary methods. (*b*) If a portion of skin covering a nævus, and itself nævoid, be left after the removal of the nævus, it will become quite natural in appearance in course of time. (*c*) A subcutaneous nævus was split in two by an écraseur chain passed round it beneath the skin. The two halves could only unite by cicatrix. The whole shrivelled up. (*d*) If the pedicle of a transplanted flap of skin be divided the flap is very liable to dwindle after some time, hence Mr. Teale never divides the pedicle. (*f*) Syndectomy, or the operation of removing a portion of conjunctiva round the whole circumference of the cornea, to induce atrophy of enlarged vessels over the cornea, is a case in point. "There are many abnormal growths of slow progress, such as fibrous tumours of the uterus, which at some period of their career become almost stationary—nay, even recede and undergo atrophy, in which the nutrition is so nicely poised that a small variation of nutritive power determines their increase or decrease." Wasting of large growths during a serious illness, shrinking of large fibroids of the uterus after boring and internal bruising, and of various tumours after subcutaneous crushing and breaking up, are all probably due to the production of internal cicatrices. "May we not hope, like the French surgeon (Thierry),

to be able to cause the disappearance of tumours without the production of visible cicatrices?" ('Brit. Med. Journ.,' Dec. 11, 1869.)

Pyæmia.—M. Guérin has propounded (before the Academy of Medicine of Paris) the theory that pyæmia is a kind of typhus, a surgical typhus, excited by miasmatic emanations. Ague is engendered by marsh miasmata, purulent infection by animal miasmata. ('Lancet,' Jan. 22, 1870.)

Dr. Joseph Bell records three cases of recovery after well-marked symptoms of pyæmia. In each case there was probably a secondary abscess of the lung, as the patient spat up a quantity of pus; and in the third case a patient also passed pus by the urine as if from an abscess in the kidney, and by the bowels as if from an abscess in the liver. The first was one of abscess of the tibia, for which trephining was practised, and finally amputation after a rigor had occurred. The second was one of compound fracture, for which secondary amputation was performed for gangrene. The third was a case of primary amputation of the thigh, followed by hospital gangrene. In the charge of the cases Dr. Bell directed his attention, not to any hope of "finding antidotes or of chemically acting on the poison;" he treated them on general principles, gave hot drinks for the rigors, and postponed any dressings if one was impending. ('Edin. Med. Journ.,' Jan. 1870.)

Skin-grafting.—Mr. Pollock showed cases, on which he had operated, to the Clinical Society. In relating the particulars of the first case in which skin-grafting had been attempted in this country, he stated that in 1869 M. Reverdin originated in Paris this method of treating large ulcerated surfaces. In May, 1870, he himself first heard of these experiments, and at once decided to put the plan to the test. A girl, eight years of age, had been in St. George's Hospital for some three months and a half with an extensive open burn of the thigh of two years' duration. The wound extended from the buttock to the knee. Two small pieces of the skin of the abdomen, the size of millet-seeds, were transplanted. Subsequently three, and again other pieces, in all about fourteen, were grafted. In about five months the whole of the extensive wound had very nearly healed, and without any perceptible contraction of the cicatricial tissue originated by the transplanted skin. In this case two pieces of black skin had been on one occasion transplanted to the ulcerated surface, and had become attached. When they increased in size the area of the pigment deposit had considerably increased in one of them, although the whole of the cicatricial tissue due to transplantation of this portion of skin was not generally dark coloured. The sore was attacked some time after by sloughing, which was chiefly confined to one portion, in which the black skin had become engrafted, and unfortunately destroyed the whole of the cicatrix due to this transplantation. Mr. Pollock usually transplanted very small pieces, similar to the plan pursued by M. Reverdin, and considered it essential to the success of the operation that the surface of the granulations should be in a healthy state. In some cases the operation had entirely failed in consequence of the state of the sore. In other cases, though one piece

transplanted had become attached and vitalised, yet, owing to the state of the patient's health, it had remained stationary, and gave no sign of increase. ('Lancet,' &c., Nov. 19, 1870.)

In the 'Lancet' for Nov. 12 it is stated that Mr. Pollock's plan, in a case noted, was to take about twelve portions of skin from the front of the forearm with dressing-forceps and scissors, and place them in three horizontal rows on the ulcer, each row being held in position by a separate piece of strapping. They were oat-shaped, from two to three lines in length, and involved the entire depth of the skin, their removal exposing in some instances the fascia of the forearm. In the course of some clinical remarks Mr. Pollock said that in cases of burns the transplantation should be effected as soon as the granulations assume a healthy appearance. In the course of two or three days the layer of superficial epithelium, which has nearly fulfilled its function, and would, in the ordinary course, soon have been shed, is frequently cast off; in a few days more, beneath the surface thus laid bare, the layer of living cells, a network of vessels can be seen with the aid of a two-inch lens, and, shortly afterwards, a pale film begins to spread from the circumference. In the course of a few weeks, after the first appearance of the film, the new skin becomes endowed with sensation. In that which was propagated from the skin of the negro, pigment began to be developed at about the same date, as shown by the spread of a change of colour in a gradually increasing surface of crescentic form. The whole process, he believes, to be one of simple cell-growth. The practical gain of the operation is the quickness with which healing occurs, and the absence of tendency to contraction of the cicatrix.

Mr. Lawson read a paper before the Clinical Society on this subject. In one case a large surface was healed rapidly by transplanting a piece of skin the size of a fourpenny piece. He formed a new eyelid for a patient suffering from complete ectropion, by liberating the lid and then transplanting, on to the raw surface, a piece of skin, the size of a threepenny piece, at the end of four days, and two days later a piece the size of a fourpenny piece. Mr. Lawson's conclusions are—that the surface must be healthy; that only the skin, without any fat adhering, should be grafted; that the portion should be accurately applied; and that it should be kept in position without intermission, being lightly covered with a layer of lint, over that a small compress of cotton-wool and a bandage, for the purpose of maintaining its warmth, and thus to assist in retaining its vitality until it has established its new life. ('Lancet,' &c., Nov. 19, 1870.)

Mr. David Fiddes writes that it is merely necessary to shave or scrape off the epidermic scales from the convex parts of the extremities, and place them on the healthy granulations. This can best be done by sweeping the scales off the knife with a camel's-hair brush. After securing them *in sitû* for three or four days by means of common adhesive plaster, the granulations on which the epidermic scales were placed assume a glazed bluish appearance, which gradually grows into skin, and meets the nearest edge of the healing ulcer, which edge shoots out and meets the newly formed skin on the granulations. ('Lancet,' Dec. 17, 1870.)

Mr. Woodman has employed Prof. Lister's non-adhesive lac plaster

(a small bit about an inch square placed over each spot), as he found that ordinary plaster often brought away a bit of skin with it on any attempt at its removal. ('Notes on Transplantation of Skin.')

Mr. Croft exhibited, at the Clinical Society, a patient on whom skin grafting had been practised. On Aug. 1, 1870, a piece of skin, a quarter of an inch in diameter, was snipped from the thigh and fixed on the sore. On the 11th there was hardly any of it to be seen, but by the 22nd an island of skin, three eighths by one fourth of an inch in size, was to be seen. This rapidly spread, and at the end of three months the whole was nearly skinned over.—('Brit. Med. Journ.,' Dec. 3, 1870.)

Mr. Bracey tried this plan in a case of severe burn in a child. The result promised to be good, but the note is made at an early date. ('Brit. Med. Journ.,' Dec. 10, 1870.)

Mr. Mason has tried it in nine cases. He had not noticed the pieces of skin to disappear. He took rather larger pieces, it is noted, than at first recommended. Mr. Lawson in two cases transplanted portions the size of a fourpenny piece. They did not disappear, but soon became vascular and spread rapidly in area. ('Lancet,' Oct. 22, 1870.)

Dr. Gillispie has tried "skin-grafting" in one case. Two pieces of skin were taken from the arm, and fastened on to an ulcer granulating healthily but tardily. After two days the patches were found adherent, with a very narrow, bluish pellicle surrounding their margins. On the fourth day an increase in the suppurative action was observed, and one of the patches fell off dead, while the other desquamated, leaving a delicate and transparent pellicle behind, resembling in every respect the film of cicatrix encroaching upon the breach of surface from the margins of the ulcer. On the sixth day the patch had grown to nearly double its original size, and at one corner reached the circumference, with which, by the tenth day, a broad isthmus of communication was effected. When this occurred the cicatrization of the ulcer progressed rapidly, and by the twenty-third day it was complete. At no period was there any temporary disappearance of the grafted skin, and the transparent and apparently vascular film, noticed first on the fourth day, continued to be visible and of similar appearance throughout. ('Brit. Med. Journ.,' Dec. 3, 1870.)

Mr. Dobson writes on this subject, 'Med. Times and Gaz.,' Oct. 29, 1870, and in the same number various cases are reported from the different hospitals. It is noted also that Prof. Frank Hamilton, of New York, long ago (1847) tried transplanting a piece of skin from one leg on to an ulcer of the opposite leg without quite severing the attachments of the skin. The legs were then fastened together. See also 'New York Med. Gazette,' Aug. 20, 1870.

Messrs. Hey and Jessop have tried the plan in a series of cases, with good results. ('Brit. Med. Journ.,' Dec. 10, 1870.)

Mr. Couper transplanted portions of skin on to an old ulcer of many years' standing. For the first fortnight they were almost indistinguishable, and then began to grow rapidly. At the same time that the grafted centres increased the ulcer was observed to heal from the cir-

cumference, whereas, before the grafting, none was observed. The patches never wholly disappeared, but could only be seen on careful examination.*

Abnormal growth of long bones.—Prof. Langenbeck communicated to the Berlin Medical Society, in 1869, an interesting contribution on a condition hitherto but little noticed; the following are the principal points. In general, the normal increase in length of the tubular bones ceases with the disappearance of the epiphyseal cartilages at about the twenty-third or twenty-fifth year of life. This growth does not depend alone on the formation of new layers at the ends of the diaphyses, but also—as was taught by Duhamel in 1743—on interstitial increase at all points. This interstitial growth, according to Langenbeck, is continued by extension of the bony substance, which, though firm, is still elastic and extensible.

The normal growth in length of the bones is frequently interrupted in rickets. In 'Virchow's Archiv für Path. Anatomie,' 1853, v, it is stated that the normal ossification of the epiphyseal cartilages is arrested, and that these cartilages increase in circumference (forming double joints) while the shafts remain short. Humphry, in vol. xlv of the 'Medico-Chirurgical Transactions,' states that the humerus and femur are one fourth shorter in rickety subjects than in healthy individuals of the same age. Langenbeck says that this shortening is more characteristic and constant in rickety bones than bending and deficiency of earthy matter.

The arrest of the growth of the bones in paralysed limbs is an interesting subject. Langenbeck has repeatedly seen growth proceed quite normally in limbs affected with paralysis of both motion and sensation, and this not unfrequently in childhood; while in other cases growth has been materially impaired, the formation of the bone being especially deficient at the articular ends.

Delay of the growth in length is observed in various diseases of the epiphyses and of the joints. It is self-evident that disease of the epiphyses, which essentially contribute to the elongation of the shafts, must lead to the shortening of the latter, and thereby of the whole bone. In such cases the atrophy of inactivity affects all parts of an extremity as soon as its function is materially interfered with for a length of time—for instance, a year. Whether this atrophy has also any connection with the contraction of joints which are not diseased, a condition but rarely attended with delay of the growth in length, Langenbeck does not determine; he believes, however, that muscular contraction may afford a purely mechanical obstacle, in cases where joints are immovably fixed, to growth in length, either by the deposit of new layers of bone or by interstitial growth. Thus, in cases of syndacty-

* Mr. McCarthy has been trying skin-grafting lately in three cases at the London Hospital. In all the cases the grafts became adherent and were followed by rapid ingrowing of circumferential dermal tissue and speedy cicatrisation. Grafts taken from another subject were not so successful as those taken from the patient experimented on; at least, in two instances, the grafts taken from another subject at first completely disappeared, then at the same spot appeared a thin film of cicatrix, which soon ulcerated, leaving a sore which healed in the ordinary manner.—(Ed.)

lism the fingers remain short, unless the skin uniting them be divided at an early period; then growth is arrested, although they are used for all coarse functions like the sound fingers. Here atrophy from inaction cannot be taken into account.

Cicatrices of burns in the neighbourhood of joints interfere in a high degree with the growth of bones. Langenbeck cites a case observed by himself, and also one related by Billroth in the 'Archiv für Klinische Chir.,' x, 1869. Billroth's case was that of a lad æt. 17, who had received a severe burn of the right hand when two years old. Cicatrisation was complete in two months. Contraction took place to the greatest extent on the dorsal surface of the carpus; in course of time the growth of the ulna, which was pressed on by the cicatrix, was arrested, while the radius continued to grow and was bent. (A drawing represents the hand as forming an angle of about 120 degrees with the ulna.) A portion of the radius, four and a half centimètres long, was excised, with a result so far satisfactory that the patient became able to write and to perform light work, although the hand had not complete power of motion.

In contradistinction to these cases of arrest of growth of bones are those changes which are attended with a morbid increase of growth, in consequence of which the symmetry of similar parts of the body may be destroyed and their functions impaired. This condition has been described by Stanley and Paget of London, and more recently Bergmann has collected a series of cases in the 'Petersburg medizin Zeitschr.' for 1868. The essential character of the process is as follows:—A hollow bone becomes permanently longer, and generally also thicker than the normal measurement, if it have been subjected to hyperæmia or inflammatory conditions for a long time before the cessation of its growth. This may be caused by chronic hyperæmia of the soft parts of a limb. In the case of a girl seventeen years old, who had for two years had an arterio-venous aneurism beneath Poupart's ligament, Broca found the femur lengthened by two centimètres, and the tibia and fibula by one. Further, chronic abscesses of bone in young subjects may be followed by hyperostosis of the tibia and fibula, ossification of the interosseous ligament, and lengthening of the bones. This has been pointed out by R. Schneider in the 'Archiv für Klin. Chir.,' 1868, ix. Chronic inflammation and caries of the joints is generally attended with an arrest of the growth in length; but, on the other hand, there may be lengthening of the bone. This has been observed by Langenbeck in his own practice. Disease of the shafts of bones is very frequently attended with abnormal lengthening; osteomyelitis and necrosis almost always have this influence. Langenbeck gives the measurements of the bones of the legs in a patient who had from his third year been affected with disease of the left leg, and who had died after an operation for cancer of the rectum. The right tibia, from the articular surface of the inner condyle to the point of the malleolus internus, measured 40 centimètres, the left 42. The right tibia measured anteriorly 38½ centimètres, the left 43. The right fibula was 38 centimètres long, the left 40. The right tibia, in the middle of the bone, was 9 centimètres in thickness, the left 13; just above the inner

malleolus the thickness of the right tibia was 10 centimètres, and that of the left 13. It is remarkable that the articular surface of the tibia was diminished in extent, contrary to what takes place in rickets, where shortening of the shaft of the bone is accompanied with expansion of the articular ends.

Langenbeck arrives at the following conclusions :—1. Morbid changes which give rise to irritation and hyperæmia of the osseous tissue lead, as long as the growth of bone continues, to an increase both in the length and in the thickness of bones. 2. The increase of growth in length affects especially the diseased bones, but may also occur in a healthy bone of the same limb. 3. A bone abnormally lengthened retains its dimensions through life ; there is no subsequent diminution of length by absorption, even when the disease which led to the excessive growth has long ceased.

Use of bromide of potassium in tetanus.—In a case of tetanus following on a burn, Dr. Bruchon ordered a drachm of the bromide to be given in divided doses during the day, and increased the quantity fifteen grains every two days till it reached two drachms, after which the disease abated. The patient, an adult male, recovered. ('Gazette des Hôpitaux,' No. 61, 1869, and 'Edin. Med. Journ.')

Mr. Robert Brown ('Edin. Med. Journ.,' May, 1869, p. 993) details a case in which recovery followed the use of bromide of potassium. A lad, æt. 12, had well-marked symptoms of tetanus come on about a fortnight after suppuration round a finger-nail. Twenty grains of the bromide were ordered every two hours, and then every hour. In nine days the dose was again given every two hours. In thirteen days he was considered to have recovered.

Use of Calabar bean.—Dr. A. J. Macarthur reports a case in the 'Edin. Med. Journal,' May, 1869, p. 989. A man, æt. 24, received a punctured wound in the right hand. On the sixteenth day symptoms of tetanus supervened. The treatment was not commenced for two more days ; then an eighth of a grain of the extract was given every hour. In two days the dose was increased to one sixth ; the next day to one quarter ; the next to half a grain every hour and a half. Eight days after commencing treatment the supply fell short and he became very ill ; he was thought to be dying. A dose, however, recovered him somewhat, and half a grain was given every two hours. Four days later he was so much better that the dose was diminished ; in five days more he was convalescent.

Mr. Holthouse relates two cases of traumatic tetanus in which the bean extract was given ; on one occasion as much as four grains and a half in a single dose. The first patient died on the fourth day, notwithstanding that "grip doses" had been given from the first every hour. The second recovered. Mr. Holthouse considered that a successful issue could scarcely be expected unless the peripheral nerves could be acted on simultaneously with the cord. The bean diminished the excitability of the latter and of the motor nerves, but did not affect the sensory nerves. Possibly opium might supply this necessary influence. ('Clin. Soc. Trans.,' ii, 94-103.)

A case of traumatic tetanus treated successfully by the administration of Calabar bean is recorded by Dr. Haining in the 'Lancet,' Dec. 18, 1869. The symptoms came on sixteen days after a crush of the leg. One-grain doses of the extract were given at first every three hours. On the fourth day the dose was doubled with the effect that after each dose complete relaxation occurred. On the sixth day the dose was increased to three grains. The following day the spasm was so great that the dose could not be taken by the mouth, and an injection of a third of a grain, subcutaneously, controlled the spasm for a time. On the twenty-second day the dose had increased (by injection) to forty-one grains in the twenty-four hours, the largest individual dose being six grains. When the injections were omitted the spasms returned. On the twenty-seventh day the dose was diminished. On the thirty-first day the extract was discontinued. The fluid was made slightly alkaline by the addition of bicarbonate of potash. The injections were repeated in proportion to the severity of the symptoms. Several abscesses occurred in connection with the punctures.

Use of curare.—Professor Busch, of Bonn, gives his experience in the history and treatment of traumatic tetanus and trismus during the Bohemian war of 1866, in a pamphlet republished from the 'Verhandl. des Naturh. Vereins für Rheinland und Westphalen.' The fights in Paris in 1848 brought 1000 wounded to the hospital, but none were attacked by tetanus. During the Schleswig-Holstein war, 1849, a single case came under the notice of Stromeyer. On the other hand, there were eighty-six cases during the Italian war of 1859, on the Austrian side, as Demme informs us, and even more, namely, 140, on the Italian side. The expedition to the Crimea occasioned the admission to, and the treatment of, 12,094 wounded in the English hospitals, nineteen of whom, only, suffered from subsequent attacks of tetanus. 363 such cases occurred during the great American war. The percentage of occurrences is largest in hot climates; for instance, Gilbert Blanc states that thirty cases of traumatic trismus and tetanus happened during the West Indian war, when the number of the wounded was 810. Dr. Busch had twenty-one cases under his observation in his field hospitals. Twelve of these were in the castle of Hradek, where 500 patients were accommodated; five in the Lazaretto of Nechanic, where 600 were confined; two in Castle Prim, and two in Castle Stracon. Dr. Busch believed that special localities and overcrowding favoured the attacks. Almost all the cases were gunshot wounds of the lower extremities; this is partly explained by the timely removal, to more distant hospitals, of those who had wounds of the upper limbs. The percentage of recovery is larger in tropical climates; at least Blanc saved 43 per cent.; of Demme's cases 7 per cent. recovered; 7·4 was the per cent. in the American war; of Busch's twenty-one cases, seven were saved, *i. e.* 33⅓ per cent. The proportion is the more favorable the less acute the cases are. When the symptoms become alarming on the first or second day of the attack, where the pulse reaches from 90 to 120 beats, and the temperature exceeds 40° C. (104° F.), no hope is left. The intensity of the single attacks, the ra-

pidity with which the convulsions spread from one group of muscles to the other, are of bad augury. When, shortly after the first warnings, the neck gets stiff, the teeth cannot be separated, and when the convulsions, soon after, reach the trunk and extremities, and the tonic spasms change into chronic, the patients usually die. On the contrary, there is more hope of recovery when the mobility of the neck is only slightly interfered with, when the difficulty of opening the mouth increases slowly, when, to the affections of the muscles of deglutition and mastication either no general convulsions supervene, or the muscles of the trunk and extremities suffer only at a late period and moderately. The time the disease lasted varied in Busch's cases from twelve days to a month. Demme treated twenty-two cases with curare, eight of which recovered; Busch eleven cases, five of which ended fatally. Of the six which recovered, one owed it more to morphia, given subsequently to the curare, than to the latter. In very acute attacks Busch thinks it of no use to try curare; he treated his first nine cases with morphia and inhalations of chloroform. He had one remarkably bad case where a quarter of a grain of morphia was injected every two hours, and the patient recovered contrary to all expectation. The mode of exhibiting the curare was by subcutaneous injection; $\frac{1}{30}$th to $\frac{1}{30}$th of a grain of the pure article will suffice injected every two hours. The eleven cases are related in which this was done, and the post-mortem appearances given in some. The author refers to the experiments of Humboldt, Brodie, and Voison, made on animals; to the treatment of tetanus in horses with curare, by Lavell (1810-12), and its first use in men by Vella (1859). The physiological effect of curare is paralysis of the ends of the nerves in the muscles; by this the electric currents are impeded from reaching these muscles. It seems that the peripheric ends of the nerves get earlier paralysed in these muscles affected with electric tension than in those not affected with tetanus. The improvement of the patients is attested by the decreasing intensities of the convulsions. The patients themselves urgently requested the exhibition of the remedy, as soon as they became aware of an imminent spasm by the increased rigidity of the muscles. The author considers it desirable to employ for the future the efficient component part of the remedy—the *curarine*. Sulphate of curarin was exhibited at a subsequent meeting of the society (Rheno-Westphalian Association for Natural History and Science), by Dr. Preyer. ('Med. Times and Gaz.,' 1869, i, 474.)

Division of nerves.—Dr. Ogle continues his narration of fatal cases of tetanus, both traumatic and idiopathic, in the 'Med.-Chir. Review,' April, 1869. With reference to divisions of nerves he mentions that Mr. Lee divided the posterior tibial nerve in one case and the median in another. "Mr. Wilkinson, of the veterinary department of the army, has recently informed me that in the case of horses they scarcely ever find division of the nerve produce any good in traumatic tetanus. Cases owing to cold, &c., are often saved, but not so traumatic cases. Traumatic tetanus in the horse is, however, recovered from. Several such cases are recorded, for example, by the late Mr. Field, veterinary surgeon,

in a little volume containing interesting cases of all kinds, entitled, 'Posthumous Extracts from Veterinary Records, 1843.' Some valuable remarks on the morbid anatomy of tetanus, generally, then follow. He also notes a case in which recovery followed after the administration of belladonna. A labourer, 18 years of age, was seized with tetanic symptoms after exposure to weather and a month before admission. The treatment consisted in the internal administration of one eighth of a grain of belladonna (extract) every four hours, for one day; every three hours, for second day and every six hours, for thirteen days more. The pulse averaged 70. He was then ordered quinine. Five cases are noted in which tetanoid spasms occurred in connection with other diseases.

Congenital dislocation of the clavicle.—Dr. R. W. Smith describes a specimen of congenital luxation of the clavicle. No history attached to the specimen. The clavicle was imperfectly developed, the aspect of its surfaces was altered. There was no acromial articular surface, nor one on the scapula and the surfaces of the acromion process were altered in direction. A figure of the condition of parts is given. The acromial end of the clavicle rested against the spine of the scapula, two inches from the acromion, which was excavated. The anterior (now inferior) surface of the clavicle was worn considerably where the shaft moved on the coracoid. ('Dub. Quart. Journ.,' Nov. 1870.)

Reduction of dislocation of the humerus.—Mr. Lowe has found the plan of elevation of the arm, combined with extension and pressure on the scapula, invariably successful. He places the patient in a sitting posture on the floor, stands on a couch or chair, and (having removed his boot) places his left foot on the acromion, and then extends vigorously. He mentions seven cases. ('St. Barth. Hosp. Rep.,' vi, 4.)

In remarking on a case of sub-coracoid luxation of the humerus of six and a half months' duration, and the dangers attending attempts at reduction, Prof. Richet states that Sédillot reduced one, more than a year old; Smith after ten, nine, eight, seven, and six months; Malgaigne after eight months; Caron du Pillard after six months. The patient in the present case was a man thirty-two years of age. The plan adopted was to move the humerus in every direction to break down adhesions, while traction was kept up and, then, suddenly, to release the extension and carry the hand across the chest, while the head of the bone was lifted into its place. The result was a partial success, and the patient was left for a second trial of which no note is made. After alluding to the various views held as to the propriety and practicability of reducing old standing dislocations, he remarks, that one single case of reduction, well observed, is more demonstrative than all the arguments urged against it by the anatomo-pathologist. ('Med. Times and Gaz.,' Sept. 24, 1870.)

In a case of fracture of the neck of the humerus with sub-glenoid dislocation of the head, Mr. Walton succeeded in reducing the dislocation at the end of ten weeks. The patient was a stout man 48 years old. The union of the fracture was not firm. A long splint was fastened on each side the limb; a broad strap was placed across

the shoulder, and the ends carried down over the belly and back, and attached to a cord in a line with the body. By this the scapula and clavicle were fixed. The head of the humerus was drawn upwards and outwards by another strap from the armpit to a pulley behind the patient's head. Extension was kept up for three quarters of an hour before the reduction was effected. No extension was made on the arm itself, Mr. Walton simply manipulating this. The reduction occurred suddenly. The patient recovered well. ('Med. Times and Gaz.,' Nov. 6, 1869.)

From a review of M. Sédillot's large work entitled 'Contributions à la Chirurgie,' in the 'Dub. Quart. Journ.,' we find that this author has paid particular attention to dislocations of the humerus into the infra-spinous fossa of the scapula, and to dislocations of the femur. Of the latter, he states the most common, in his experience, to be downwards, into the obturator foramen. He also states that patients suffering from this dislocation may retain the power of walking with facility from the time of the occurrence of the accident, and thus it is very possible that such dislocation may be overlooked. Six cases are recorded where the power of walking was retained, and two in which the dislocation was probably overlooked.

Dislocation of radius and ulna forwards.—Dr. Forbes records a case of dislocation of both bones of the forearm forwards without fracture. The patient was a lad twelve years of age. The accident was a blow on the olecranon while the forearm was flexed. ('Amer. Journ. Med. Sciences,' Oct., 1869.)

The mechanism of dislocation of the hip, and its reduction by the flexion method.—H. J. Bigelow, M.D. (Philadelphia), has written a work on the subject. He gives the following summary of his conclusions: (1) The anterior part of the capsule of the joint is a triangular ligament of great strength, which when well developed exhibits an internal and external fasciculus, diverging like the branches of the inverted letter Y. It passes from the anterior inferior spinous process of the ilium, and is inserted into nearly the whole length of the anterior intertrochanteric line. (2) The Y ligament, the internal obturator muscle, and the capsule subjacent to it, are alone required to explain the usual phenomena of the regular luxations. (3) The regular luxations are those in which one or both branches of the Y ligament is unbroken, and their signs are constant. (4) The irregular dislocations are those in which the Y ligament is wholly ruptured, and they offer no constant signs. (5) In the regular dislocations of the hip, the muscles are not essential to give position to the limb, nor desirable as aids in its reduction. (6) The Y ligament will alone effect reduction, and explain its phenomena, a part of those connected with the dorsal dislocations excepted. (7) During the process of reduction this ligament should be kept constantly in mind. (8) The rest of the capsule, except perhaps that portion beneath the internal obturator tendon, need not be considered in reduction if the capsular orifice is large enough to admit the

head of the femur easily. (9) If the capsular orifice is too small to admit of easy reduction, it should be enlarged. (10) The capsular orifice may be enlarged at will, and with impunity, by circumduction of the flexed thigh. (11) Recent dislocations can be best reduced by manipulation, and (12) the basis of this manipulation is flexion of the thigh. (13) This manipulation is efficient, because it relaxes the Y ligament, or because that ligament, when it remains tense, is a fixed point, around which the head of the bone revolves near the socket. (14) The further manipulation of the flexed thigh may be either traction or rotation. (15) The dorsal dislocation owes its inversion to the external branch of the Y ligament. (16) The so-called ischiatic dislocation owes nothing whatever of its character or its difficulty of reduction, by horizontal extension, to the ischiatic notch. (17) This dislocation is better named "*dorsal below the tendon*" (internal obturator), and is easily reduced by manipulation. (18) The flexion of the thyroid and downward dislocations is due to the Y ligament, which, in the first, also everts the limb, until the trochanter rests upon the pelvis. (19) In the pelvic dislocation the range of the bone upon the pubes is limited by this ligament, which, in the subspinous dislocation also, binds the neck of the femur to the pelvis. (20) In the dorsal dislocation with eversion, the outer branch of the Y ligament is ruptured. (21) In the anterior oblique dislocation the head of the bone is hooked over the entire ligament, the limb being then necessarily oblique, everted, and a little flexed. (22) In the supra-spinous luxation the head of the femur is equally hooked over the Y ligament, the external branch of which is broken. The limb may then remain extended. (23) In old luxations, the period during which reduction is possible is determined by the extent of the obliteration of the socket, the strength of the neck of the femur, and the absence of osseous excrescence. (24) Old luxations may possibly require the use of pulleys, in order, by traction, to avoid any danger which might result to the atrophied or degenerated neck of the bone from rotation. (25) Right-angled extension, the femur being flexed at right angle with the pelvis, is more advantageous than that which has usually been employed. (26) To make such extension most effective, a special apparatus is required. The figures given in the book cause the above details to be easily understood.

Fracture of the neck of the femur.—Dr. Bigelow has also investigated the subject of fractures of the neck of the femur, and thus summarises his conclusions: (1) The terms intra- and extra-capsular, applied to these fractures, have little practical significance. (2) When a fracture near the head of the bone shows bony union, it is often impossible to say whether such a fracture was originally inside or outside of the capsular ligament. (3) A better division, therefore, for practical purposes is into, first, the impacted fracture of the neck into the trochanter; second, other fractures of the neck. (4) In this impacted fracture the limb is everted, because the posterior cervical wall is almost always impacted, the anterior very rarely, and in a less degree. (5) These conditions mainly result from the relative thickness of the two

walls. (6) While eversion is due to the rotation of the fractured bone on a hinge formed in the anterior cervical wall, shortening is generally due to the obliquities of this hinge. (7) In a well-formed bone the posterior and thin surface of the neck of the bone is prolonged into the cancellous texture beneath the anterior introchanteric ridge, and is the true neck. (8) The posterior inter-trochanteric ridge is a buttress built upon the true neck, by which, when impacted, this ridge is sometimes split off.

Mr. W. Adams has described (in the 'Pathological Transactions,' xxi, p. 305) the appearances presented after death by a recent unreduced dislocation of the femur backwards on to the base of the spine of the ischium. The head of the bone had passed in a direction upwards and backwards, between the obturator externus and internus muscles. The chief obstacle to its further progress was evidently the obturator internus muscle, the tendon of which was tightly stretched across the upper part of the head of the bone. The capsular ligament was torn at the posterior part, and the chief difficulty in reduction consisted in the strong anterior half, which could not be stretched enough to allow the head of the bone to be lifted over the posterior border of the acetabulum. The ligamentum teres was torn. The movement required for reduction was, first, extension of the thigh in an oblique direction inwards; secondly, a powerful rotatory movement, outwards, of the thigh bone upon its own axis, by which the head of the bone was directed inwards towards the socket, into which it slipped when the anterior part of the capsule was sufficiently stretched. It did not appear that any important muscular resistance could be offered to reduction. Figures are given.

Mr. Hamilton describes a case of dislocation of the femur which he found quite impossible of reduction, on account of the small opening in the capsule and a fracture of the acetabulum allowing the capsule to double up. This was shown at the post-mortem examination. ('Dub. Quart. Journ.,' Feb., 1869.)

Mr. Birkett has published, in the 'Medico-Chirurgical Trans.,' lii, p. 133, the case of a woman, aged 35, who was killed by injuries inflicted on the brain. She had fallen from a height. Dislocation of the head of the femur on to the dorsum ilii was discovered, with crepitus on rotation, and, after death, the head was found to rest just above the acetabulum; a piece of the head, however, was broken off and lay in the acetabulum, retained there by the ligamentum teres, which was very slightly torn. The cartilage-covered head of the femur was uncovered by its capsular ligament, a small piece of which lay torn upon it. A few fibres of the ligamentum teres remained attached to the usual depression on its surface. The head was still slightly attached to the fragment broken off. The cotyloid ligament was detached from the posterior brim of the acetabulum. The rent of the capsular ligament was limited to the posterior surface. Mr. Birkett remarks that no similar case has probably ever been described. The mode in which the head of the femur was broken may have been either that the head of the bone was split by being forcibly driven against the strong edge of the acetabulum; or that the strength of the ligamentum teres and its

attachment was sufficient to overpower the cohesion of the bony tissue whilst the femur was violently driven upwards and backwards.

In reference to this case Dr. W. Smith wrote to the author, to the effect that he considered it analogous to one of fracture of the head of the tibia that he had met with, in which a portion of the articular surface was violently torn off by the traction of the ligaments.

Dislocation of the tendon of the peroneus longus.—Mr. Curling, in the 'Brit. Med. Journal,' Jan. 2, 1869, narrates the case of a young gentleman twenty-one years of age, who hurt his foot in jumping. The patient noticed a projecting cord in front of the outer ankle, and easily pressed it back with great relief. He then saw a surgeon, who diagnosed dislocation of the tendon of the peroneus longus, and strapped on a piece of cork, as the displacement recurred. Mr. Curling ordered a laced-up sock with a pad to fit behind the ankle, to be worn for some years.

Fractures of the sternal end of the clavicle.—Dr. R. W. Smith writes ('Dublin Quart. Journ.,' Aug., 1870) on fractures of the sternal end of the clavicle. He has never met with a case of intra-rhomboid fracture, and doubts the probability of its occurrence. He thinks that if it did occur the outer portion would be displaced just the same (forwards) as the direction of the ligament (backwards) would allow of it. This does occur in dislocation. Two cases of fracture three quarters of an inch and three from an inch and a quarter to two inches from the sternal end are described and illustrated. "In ten cases which I have either described or referred to in this memoir, the direction of the displacement was the same, the inner end of the acromial fragment projecting in front, and, in most of them, having been drawn downwards and inwards." In none of them was the inner fragment displaced, the ligaments keeping it in place. This is the case irrespective of the distance of the seat of fracture from the sternal end.

Fractures of forearm, &c.—Mr. Callender writes on the fractures of the bones of the forearm, interfering with pronation and supination. In many of these cases supination is almost wholly lost. The plan of treatment he recommends is that the elbow should be semiflexed, as the position most comfortable to the patient. The forearm and hand should be supported between two splints. The limb should be accurately fixed in supination, at an angle of 120°, by means of angular pads, which are easily adapted to the ordinary straight splints, being worked by measurement to the proper angle. In this position the thumb is brought nearly in a line with the outer fleshy border of the supinator radii longus, instead of forming one with the centre of the bend of the elbow, as when the forearm is semiprone; but the forearm is not rotated to the degree of supination recommended by Lonsdale and Malgaigne. The pads should present an even surface towards the broken bones, for, practically, there is no need for directing pressure over the interosseous space, as the shafts of the radius and ulna keep perfectly well asunder without it. If this plan of treatment is carefully followed, the patient

will recover perfect rotation without incurring the risks from angular displacement which are said to follow the treatment by complete supination of the forearm and hand. Some interesting cases of injury to nerves in joint fractures, of pain after joint fractures, and of nutrition spoiled after hurts to nerves are detailed; also cases of fractures of the patella and "sprain fractures." Under the latter heading "may be included many cases which scarcely receive sufficient attention, and which are very troublesome in their results; cases in which some ligament is torn, carrying with it a film or shell of bone, into which its fibres are inserted. These cases are of common occurrence, and illustrate the rule that bone gives way before fibrous tissue tears. Their troublesome after-consequences may be (1) deformity and impaired movement of a joint; (2) the production of a semidetached body which may become entangled between joint surfaces; or (3) necrosis of a bit of bone within an articulation. They merit attention because their origin is in hurts apt to be considered trivial, because the damage is unfortunately apt to be overlooked, and because some of them are amongst the cases which get, later on, into the hands of bone-setters and joint-manipulators, usually to the great hurt of the patient." This sort of accident is very common at the ankle. Cases of injury to the bones of the knee in a similar manner are narrated. ('St. Barth. Hosp. Rep.,' vi, p. 33.)

Fractures of the neck of the femur.—Mr. Bryant writes on this subject, and details cases in the 'Medical Times and Gazette,' April 17th and May 1st, 1869. Woodcuts are given of specimens from four cases. The common occurrence of impaction is insisted on, and the following conclusions are deduced from the table of symptoms drawn up:—(1) That in all the cases the injury to the hip-joint was communicated through the great trochanter. (2) That, as a result of the injury, there was more or less loss of power in the limb; in some cases it was complete; in as many the patient could rotate the limb slightly on the couch; and in two cases partial flexion of the thigh could be performed. (3) That in all the cases immediate shortening of the injured limb was the direct result of the accident, and that this shortening was about one inch or less, and was irremediable by extension. (4) That the foot of the injured extremity was either straight or slightly everted, although in several cases this eversion was less marked on the injured than on the sound side. (5) That the great trochanter was placed nearer the median line of the body and also nearer the anterior superior spinous process of the crest of the ilium than on the sound side. (6) That the head of the femur could be made to rotate smoothly in the acetabulum, and that the great trochanter moved with it. (7) That crepitus was either absent or indistinct in all the cases. (8) That all the cases, with one exception, occurred in patients past middle age. "Now these symptoms, taken as a whole, without the slightest doubt indicate an impacted fracture; for, although there are other injuries to the hip-joint, which may give rise, separately, to many of the symptoms just detailed, there are none in which all, or most, are found combined. There is no injury to the hip-joint in which the head of the femur rests

and can be made to rotate in its acetabulum, in which immediate shortening is ever found, with the exception of a fracture; and there is no form of fracture that occurs under like circumstances, with the exception of the impacted, that is, not accompanied by a crepitus which can be readily detected, complete eversion of the foot, and loss of power over the limb. In fact, the symptoms of an impacted fracture are most marked when taken together, and cannot well be misinterpreted. They are as marked as those of ordinary dislocation of the head of the femur, or of an ordinary non-impacted fracture of the neck of the bone."

Impacted fracture of the neck of the femur.—In the 'Med. Jahrb. d. Wiener Gesellschaft d. Ærzte,' 1869, No. 3, will be found an elaborate account of the pathology of the accident, with a description of the preparations in the Berlin and St. Petersburg Museums, illustrated by lithographs. (Quoted 'Med. Chir. Review,' Oct., 1869.)

United intra-capsular fracture of the femur.—A specimen in the Leeds Museum is figured and described, and the clinical history given in the 'Brit. Med. Journ.,' Jan. 1, 1870.

Mr. Holmes mentions a similar specimen contained in St. George's Museum. ('Brit. Med. Journ.,' Jan. 8.)

Dr. Packard exhibited a specimen of united intra-capsular fracture of the femur in an old woman. A committee appointed to report on this specimen agreed as to its nature. ('Amer. Journ. of Medical Sciences,' April, 1870, p. 395.)

Improved means of treatment of fractures of the lower jaw.—Dr. Bullock advocates Lonsdale's splint on an improved plan. A mould is made for the teeth of the lower jaw (after a wax model has been taken) of ivory, metal, or vulcanised india-rubber, to which, opposite the bicuspid teeth, are fastened two strong wires passing up over the lip and out at each corner of the mouth, then curving down and having a ring at the end. A flat piece of wood (or other substance) is placed under the jaw and then fastened to the rings of the wire. The instrument is more sightly than Lonsdale's. A woodcut is given. ('Amer. Journ. Med. Sciences,' Oct., 1869.)

Fractures of the patella.—In the 'Med. Chir. Trans.,' lii, p. 327, Mr. Hutchinson states the following, among many conclusions: 1. That, after the ordinary transverse fracture of the patella, the upper fragment is not permanently dragged upon by the quadriceps; that, on the contrary, the muscle remains quite passive, and that there is not the slightest benefit from elevation of the limb. 2. That the main cause of separation of the fragments is swelling of the soft parts and effusion into the joint, and that when swelling does not occur, or after it has subsided, it is easy to make the fragments touch. 3. That one of the chief causes of the frequent weakness of the fibrous union which results is the presence of fluid (synovia) between the fragments, and that it is not usually difficult by ordinary means, to bring the fragments quite close enough to admit of union, were it not that the presence of fluid

hinders its occurrence. 4. That a remarkable weakening of the quadriceps muscle is a common result of these accidents, sometimes amounting to absolute atrophy. That this partial or complete paralysis cannot be explained merely by reference to long rest of the limb, since the flexors do not share it. That it occurs in some cases in which the union is excellent. 5. That in almost all cases the quadriceps becomes slightly but permanently shortened by contraction, so that, however excellent the union may be, the knee cannot be bent without risk of stretching the uniting medium. That the chief danger after union consists in allowing the patient to bend his knee, and thus drag the lower fragment downwards, there being little or none in allowing him to use the quadriceps as an extensor. 6. That patients with absolute paralysis of the quadriceps are yet able to walk fairly and suffer no inconvenience whatever from contraction of its antagonists. 7. That bony union is probably an exceedingly rare event, whilst close fibrous union is easy of attainment; that it is quite impossible to distinguish between the two in the living patient, and, further, that all statements as to "bony union" are worthless, unless made on examination at least a year after the accident. That the atrophic weakening of the quadriceps explains in many cases the patient's lameness, and that its frequent occurrence tends to reduce the temptation to resort to certain heroic and dangerous methods of keeping the fragments in apposition.

Compound fracture of the patella.—Mr. Poland brought a case before the notice of the Med.-Chir. Soc. of compound fracture of the patella, in which an attempt had been made to save the limb, but amputation had ultimately to be performed. He adduced the statistics of fifty-six recorded cases. He dwelt on the mode in which the injury was inflicted and the possibility of its occurrence without wound of the joint. The tendency of the discussion was against such a possibility. Cases should be treated first on conservative principles, and amputation resorted to if necessary. ('Med. Times and Gazette,' and other papers, Feb. 5th, 1870.)

Recovery after fracture of spine with displacement.—Amongst the most interesting of all the specimens shown at the Leeds meeting of the Brit. Med. Association was one supplied by Mr. Teale, which had the advantage of a long life history. It was from a case in which perfect recovery followed a fracture of the spine with displacement. The patient, an adult man, had been under the care of the late Mr. Teale, in the infirmary, twelve years ago. His accident had been caused by a beam falling across his back, and when admitted all the usual signs of fracture, with displacement, were present. He was unable to move his legs, and for three weeks afterwards he required the use of the catheter to empty his bladder. Sensation was not at any time wholly lost. At the end of three weeks he became able to pass his urine, and could walk across the floor with the aid of a stick. Six weeks after the accident he could walk well, and was discharged recovered. A projection of the spinous process of the first lumbar vertebra had been felt from the first, and was present when he left the

hospital. After twelve years' good health he was again admitted (under the care of a physician) with typhus fever, of which he died, and the specimen was then obtained. It shows an obtuse bend forwards in the upper lumbar region. The body of the second lumbar has been crushed, and, at its anterior border, is not more than half its normal thickness; anchylosis between the first and second has occurred. ('Med.-Chir. Review,' Oct., 1869.)

A specimen showing dislocation of the first and fracture of the second lumbar vertebræ, from a patient who survived three and a half years, is described and figured by Mr. W. Wagstaffe. ('Path. Trans.,' xxi, p. 327.)

Dr. Bennett narrates a case of fracture of the third lumbar vertebra, from direct violence, without the spinal canal being encroached on. ('Dub. Quart. Journ.,' Feb., 1869.)

Concussion, &c., of the spine.—In an article on the effects of injuries to the spinal cord, by Mr. Savory, is narrated the case of a man who had fallen on to his head from a railway van. In the first few minutes he was stunned, but this soon passed off. When admitted he had complete loss of motion and sensation in the lower and upper extremities, and in the trunk nearly as high as the clavicles. The respiration was entirely diphragmatic, the walls of the chest sinking inwards at each inspiratory effort. No reflex action of the lower extremities or elsewhere could be excited. The pupils were moderately and equally dilated, but sluggish. There was partial priapism. He died in about thirty hours. There was no fracture or displacement of any portion of the skull or spine, neither was there hæmorrhage or material congestion of any portion of the surface of the brain or spinal cord. A longitudinal section of the cord disclosed, opposite the fourth cervical vertebra, a clot of blood, which was extravasated throughout its substance to an extent of about half an inch. This was well defined, and nothing wrong could be detected in the adjacent or other portions of the cord. Here, then, the two great functions of the cord were struck out, for not only was there complete loss of sensation and voluntary motion, but almost complete absence of any reflex action. And it is clear that while the loss of the function can, the loss of reflex action cannot be accounted for by the visible lesion—the clot of blood. The destruction or impairment of the function of the cord as a centre must have been due to the concussion, which, however, produced no effect upon the structure, which was visible after death. ('St. Barth. Hosp. Rep.,' v, p. 45.)

Two cases of trephining of the spine are narrated by Dr. Cheever ('Boston City Hosp. Rep.,' p. 577). The patient was a man aged forty, suffering from fracture of the dorsal spine. There was "not much apparent change" after the operation, but it is said "the inspiratory power of the intercostal muscles" was restored, and also "the trunk and thighs to sensibility." The chest was injured. In the other case the symptoms were not relieved.

Spina bifida.—Mr. Thomas Smith describes ('Path. Trans.,' xxi,

p. 1) a peculiar case of spina bifida. The sac consisted of two distinct parts.

Mr. Sidebottom records a case in which he ligatured a spina bifida in the lumbar region, of the size of an orange, two days after birth. Three separate ligatures were used on successive days. Beyond slight clonic convulsions, lasting a few hours on the second occasion, no evil symptoms followed. ('Brit. Med. Journ.,' Sept. 25th, 1869.)

M. Roux, in the 'Bulletin de Thérapeutique,' has published the case of a girl six weeks old, who had a spina bifida of the sacral region. He injected a diluted solution of iodine, the aperture into the spinal canal being compressed as far as possible by an assistant, and the injection being removed, after five minutes, by the suction power of the syringe. A cure resulted.

Extroversion of the bladder.—Mr. John Wood has contributed to the 'Med.-Chir. Trans.,' lii, p. 85, his experience of operative interference in cases of fission and extroversion of the bladder with epispadias. He has operated on eight. In seven he made a complete covering for the bladder. The eighth was that of a very young female, and was totally unsuccessful on account of the child's crying. His latest plan is to turn down at the first operation a large and long umbilical flap, with its skin surface next the bladder, and long enough to reach the root of the penis. This flap is covered by two lateral flaps taken from the groin with their bases towards the penis, scrotum and thigh, so as to be nourished by the superficial branches of the femoral artery, and united in the median line over the umbilical or reversed one, with their raw surfaces in contact with it. In the second stage, the author provides a preputial covering for the glans penis from the scrotum and under surface of the penis, which he raises from the deeper part in the form of a bridge of skin retained at both ends to its original connections, and lifted in the middle over and across the penis like a saddle. This is placed with its raw surface in contact with that of a reversed fold of skin, turned over from the sides of the opening left by the first operation, the whole being held together by a continuous wire suture. The sides of the wound in the scrotum are then brought together vertically over the tunicæ vaginales and testes, the hinder half of the bag of the scrotum being amply sufficient to cover the whole. Hairs sometimes cause trouble, but are partly destroyed by the urine, and the others may be easily removed with forceps. In the second stage, just described, the flap to form a preputial covering, consisting in the whole front of the scrotum, and the skin covering the lower side of the penis should be thick enough to include the *dartos scroti*.

As to the result, the author states that this can be realised by actual inspection only. In the case of an adult man exhibited before the Society, the transplanted dartos encircled and embraced the newly formed urethra, so that when the finger was introduced into the bladder it was clasped and held with considerable force. An instrument could easily be fixed around the urethra without including the scrotum, and the whole of the urine passed over the urethral channel as over the spout of a jug, with very little trickling down the sides. Afterwards

this patient was operated on again with considerable relief, the urethral aperture being limited to the width of the urethral groove of mucous membrane. With some difficulty the finger could be passed into the bladder, when the edge of the *dartos* could be felt contracting like a sphincter. When the patient was lying down an accumulation of urine took place to the extent of two table-spoonfuls contained in the dish-like curve of the hinder wall of the bladder, and held in by the transplanted tissues acting like a lid to the dish. On rising from the recumbent posture and putting the abdominal muscles into action, the urine becomes expelled with a sort of gush. Erections of the deformed penis, with emission of semen and even procreation have occurred. The penis has been covered close up to (and sometimes over) the glans by a hood of skin very contractile and accommodating. The author hopes that in a little while an india-rubber ring may be worn so as to close up the urethra, until a fitting occasion arises for the evacuation of the bladder. As regards the origin of these cases, the author supports the view that they are due to arrest of development. He says that in an ovum described and figured by Coste, belonging to the second period of development (between the 10th and 20th days after conception), and in another, from Wagner, of about the 21st day, both given in Baly's translation of Müller's 'Physiology' (ii, figs. 220 and 222), the *allantois* sac is found just as it begins to be attached to the *chorion* to form the umbilical cord. Its outer or amnionic layer (vascular layer of Von Baer, in which are afterwards formed the umbilical arteries, and which forms the sheath of the funis), is seen in both these specimens to be continuous with the edges of the fissure in the yet imperfectly closed abdominal wall. In the inside of this is an inner cylindrical portion (constituting the mucous layer of Von Baer), which is prolonged down into the pelvic cavity, where it is continuous with the end of the intestine, and is connected with the lower part of the Wolffian body, from which it seems to be originally developed. This union with the intestine afterwards forms the common cloacal cavity persistent in some of the lower animals, which, according to Tiedemann, opens externally about the fifth or sixth week. By arrest of development at this stage originate those extreme cases of deformity in which the bowels open on the exposed bladder or urethra, or the ureters open into the rectum. In the normal course of development the rectum and anus become separated from the ducts of the urinary and genital organs and a common *sinus urogenitalis*, is then found into which open the Wolffian ducts, the ureters and the efferent ducts of the generative apparatus. From this is afterwards differentiated the bladder, urachus and urethra on the one hand; and the prostate and its appendages, or the uterus and vagina on the other. If, at this stage, an arrest occur in the growth of the outer abdominal or amnionic layer of the allantois only, the result at birth would be *Ectopia vesicæ*, *i.e.*, defect of abdominal wall only. If, however, the deeper layer be affected then there would be a more or less complete condition of *epispadias*, an open or imperfect urachus, or a completely fissured and extroverted bladder with separation of the pelvic bones, and other changes associated with that deformity. At the time of birth the hypogastric surface of the fœtus is usually found

adherent to the placenta or its membranes, and the separation of the adhesions by the process of parturition gives rise to the appearance of cicatrix in parts. This adhesion explains how it is that only the superficial portions of the affected structures are found deficient. Another result is the diminution in the distance between the umbilicus and genital organs. All these peculiarities belong to the fœtus in the beginning of the second month. The author gives also a history of previous operative procedures. Lithographic plates accompany the paper.

A lecture by Prof. Billroth will be found in the 'Med. Times and Gaz.,' March 12, 1870.

Mr. Barker, of Melbourne, records a cure of a case of congenital exposure of the bladder, in an adult female. The procedure adopted consisted in denuding the opposite margins of the opening, and bringing the parts together with deep metallic sutures and superficial horsehair sutures. Incisions were made to relieve tension. After three operations the deformity was cured, and the patient was able to retain her urine, when lying down, for two hours. ('Brit. Med. Journ.,' July 30, 1870, report 'Med. Chir. Soc.')

Mr. Annandale notes a case of unclosed urachus, with umbilical fistula, in a man aged 39. He alludes to four other cases. In all these some complication occurred in connection with the bladder, but in his there was none. ('Edin. Med. Journ.,' Feb., 1870.)

M. Granjean (in a thesis) relates a successful case operated on by M. Michel—the first in France. The patient was a male, fourteen months old. Super-imposed flaps—the one abdominal, the other lateral —are preferable. The union of the autoplastic flaps should rather be by their surfaces than their edges. The operation should be performed at the end of the first year, or as soon after as possible. A complete bibliography is given. ('Gazette Médicale de Strasbourg,' Dec. 25, 1868, quoted in 'Brit. Med. Journal,' Feb. 27, 1869.)

Puncture of bladder above pubes.—Prof. Dittel advocates the use of vulcanised caoutchouc after tapping the bladder above the pubes, so as to allow the patient to get up and walk about. ('Med.-Chir. Rev.,' July, 1870, p. 275, 'Allg. Wien. Med. Zeit.,' Jan. 4.)

Calculus with a tooth for a nucleus.—In the 'American Journal of Medical Sciences,' Jan., 1869, Dr. Blackman relates the case of a woman from whom several calculi were removed at intervals, consisting of teeth incrusted with calcareous matter. From the progress of the case, the symptoms being similar to those recorded in other cases, it was concluded that there was a communication between the bladder, ovary and rectum. A very complete summary is given of all the cases hitherto published in which hair and teeth were met with in the human bladder.

Calculus with human hair as a nucleus.—In the 'Pathological Transactions,' 1869, p. 238, Mr. Curling records the case of a man from whom he removed a calculus by lithotomy at the London Hospital. On examination the calculus was found to contain human hair as a

nucleus. It was found on inquiry that this man's case had formerly been recorded by Dr. Wilkes, in the 'Path. Trans.,' xiii, p. 143, as one of retention of urine, caused by the presence of a dermoid cyst between the bladder and the rectum. The cyst was tapped, and gave exit to a considerable quantity of fluid fatty matter, in which were portions of hair. This was eight years before lithotomy was performed.

Foreign bodies in the bladder.—Mr. Lund narrates a very interesting case in which a lad passed a piece of india-rubber tubing into his bladder. There was some doubt about the fact at first, but on endoscopic examination it became probable that the tube could be seen. No "click" could be produced on sounding. Lithotomy was performed and the tube extracted. Attention is also drawn to a peculiar sound sometimes heard on examining the female bladder with a catheter, simulating the presence of a calculus, but depending on succession of fluid. ('Brit. Med. Journ.,' July 31, 1869.)

Calculus in the female.—Mr. Henry Smith operated on a woman, aged 36, who suffered from stone in the bladder. An incision was prolonged backwards from behind the anterior third of the urethra, about an inch and a quarter, so as to divide the posterior part of the urethra and the neck of the bladder. The stone was then felt to fill almost the entire bladder. A lithotrite and forceps having failed, sequestrum forceps were used, and then a scoop, by which the stone, weighing five and a half ounces, was extracted. She died three days later. The mucous membrane of the bladder was injured, and there was peritonitis, but no injury to the peritoneum. ('Brit. Med. Journ.,' Nov. 13, 1869.)

Solvent treatment of uric acid calculus.—A detailed account by the Rev. W. V. Harcourt of experiments on himself will be found in the 'Med. Times and Gazette,' Oct. 23, 1869.

Multiple calculi in the urethra.—Mr. Annandale publishes a case in which he extracted six calculi from the urethra, which had become dilated by the efforts of the patient to pass urine while the urethra was blocked. One of the six, however, was pushed into the bladder and crushed with a lithotrite. The patient was a gentleman aged 26. ('Brit. Med. Journ.,' May 1, 1869.)

Origin and treatment of stone in children.—In a paper on the "Origin and Treatment of Stone in Boys," Mr. Thomas Smith suggests that the term urinary diathesis might be replaced by that of a dyspepsia; meaning a derangement of the process of the digestion and the separation of the products of the disordered process at the kidneys. On this hypothesis we can account for the fact that the prevailing urinary diatheses of children are the lithatic and the phosphatic rather than the oxalic; since the lithic and phosphoric acids are normal constituents of the urine, and for their production in excessive quantities no such extreme derangements of the digestive or excretory functions is neces-

sary, as would be required for the formation of an altogether abnormal substance like oxalic acid. These considerations may also explain the much greater prevalence of stone amongst the children of the poor than of the rich. Children, if properly clothed, fed and kept clean, have the natural constituents of their urine so duly proportioned, that no materials are available for the formation of urinary concretions, and the digestive functions will be little likely to be so far impaired as to give rise to any substance of a calculous nature. The children of the poor, on the other hand, are exposed to the very conditions most likely to give rise to stone. An insufficient and almost arrested cutaneous excretion, from imperfect clothing and uncleanliness, tending to disturb the due proportions of the normal constituents of the urine leading to an abnormal excess of one or more; while the digestive functions are constantly deranged, and tend to give rise to abnormal constituents of a calculous nature. The author had not heard of a case of stone in childhood among the upper classes. In later life stone is at least as common among the rich as among the poor. This may perhaps be accounted for by the prevalence of the various forms of dyspepsia consequent on luxurious diet. In remarking on lithotomy, the plan of lifting the staff well against the roof of the urethra, as the finger is passed in, is recommended. Notes of twenty cases of lateral lithotomy in boys, all of which were successful, are given. ('Brit. Med. Journ.,' May 15, 1869.)

Lithotomy.—Mr. Holmes relates a case in which, after cutting into the bladder, he could find no stone, and considers that it had fallen to the ground with the first gush of urine. He alludes to other cases. ('Clin. Soc. Trans.,' ii, p. 67.)

Statistics of lithotomy.—In the 'Brit. Med. Journal,' March 20, 1869, will be found some interesting statistics of cases of lithotomy by Dr. Keith, giving his experience for thirty years. We extract the first table.

Ages and Results.

	Cases.	Cures.	Deaths.	Death Rate.
Under 21 years .	22	21	1	1 in 22, or 4·54 per cent.
From 21 to 40 .	9	7	2	1 in 4·5, or 22·22 per cent.
From 41 to 60 .	58	52	6	1 in 9·66, or 10·34 per cent.
Above 60 . . .	119	85	34	1 in 3·50, or 28·56 per cent.
Total . . .	208	165	43	1 in 4·83, or 20·66 per cent.

He also gives statistics from various sources which we must not quote in detail; we give the gross result.

Number of Cases at different Ages.

	Under 21.	21 to 40.	41 to 60.	Above 60.	Total.
No. . .	1397	301	415	365	2488
Cures . .	1274	256	322	248	2118
Deaths .	123	45	93	117	375
Proportion of deaths	1 in 11·35	1 in 6·68	1 in 4·46	1 in 3·11	1 in 6·58

In some observations on lithotomy and on certain cases of enlarged prostate ('Lancet,' Jan. 1, 1870), Sir W. Fergusson calls attention to the proper treatment of the enlarged prostate during lithotomy. He says that, in many instances, as the finger passes towards the bladder, the sensation is as if its point glided through several round bodies in the substance of the gland, which are but slightly connected with one another. When the stone is being extracted, within the grasp of the forceps, there is often considerable resistance, even when the knife and forefinger have been freely used to give passage to and from the bladder. In some instances the stone, whilst all but through the wound, seems to be held *in situ*. If at this time the operator looks carefully, particularly on pushing the skin and margin of the wound a little aside, he will see some tissue or substance between the blades in the space between the hinge and stone. With a slight pressure of the point of the finger this object will disappear from between the blades, and extraction will then become comparatively easy. This is in reality one or more of the lobules of the gland; it has not been grasped between the blades, but has slipped forwards. On one occasion several of these bodies were cut or torn away without any evil result following, and in one case the lower part of the prostate was found so loose that it was enucleated with the finger as readily as if it had been a stone lying loose. Inasmuch as an enlarged lobe of the prostate causes great irritation, it is advocated that enucleation, when practicable, be performed so as to rid your patient of two evils at one operation.

Mr. Benfield gives an account of 69 cases of lithotomy at Leicester. 57 were median operations with 3 deaths, or 1 in 19; of these 9 were adults, or above seventeen years of age; the deaths were 2 adults and 1 juvenile. 12 were lateral operations with 1 death (in an adult); so that, of the 69 cases, death occurred in 4, that is, 1 in 17. Of 90 cases formerly published (all lateral) 8 died, or 1 in 11. Of 57 recent (median), 1 in 19. In the one fatal case death followed hæmorrhage, caused probably by the knife slipping from the staff and wounding the artery of the bulb. ('Brit. Med. Journ.,' Feb. 5, 1870.)

Recto-vesical lithotomy.—Dr. Bauer records ('St. Louis Med. and Surg. Journ.,' No. 1, 1870) the case of a man from whom he removed a calculus weighing 720 grains (when dried) by a recto-vesical opera-

tion. The wound was closed by wire suture and healed by first intention. The urine was drawn off by a catheter for six days. In another case a stone weighing 646 grains was removed by a vesico-vaginal operation with similar success. ('Edin. Med. Journ.,' April, 1870.)

Lithotrity.—Sir Henry Thompson read a paper before the Med. Chir. Soc., containing an analysis of 184 cases of stone in the bladder of the adult, treated by lithotrity. All the cases were consecutive, and treated within a recent period by a uniform method. The mean age of the 184 cases was no less than sixty-one years. The youngest was twenty-two years old; only three were below thirty; the oldest was eighty-four. There were 46 of seventy years old and upwards. With very few exceptions, all stones of an ounce and upward were reserved for lithotomy; all obviously below that were crushed. Not one case was refused operation, not one left unfinished, and in no instance was an operation of lithotrity completed by lithotomy. The recoveries were 93 per cent. on the whole number; but 5 cases of death, not by any means due to the operation, being excluded, the mortality is reduced to 4 per cent. A second operation, for recurrence of the stone, was performed in 13 cases. The important logical conclusion to be derived from the mass of facts considered was, that lithotrity is an eminently successful operation. For a certain number of cases its success may be regarded as a certainty—absolutely without fear of any contingency, except such as attends the minor operations of surgery—for example, the opening of a small abscess, or the passing of a catheter. The author stated that he had never lost a patient in the whole course of his experience after crushing a stone which was no larger than a small nut; and this he considered was a size at which, with few exceptions, every stone ought to be discovered. When lithotrity is employed for a stone as large as a date, or a small chestnut—and it is impossible to deny the excellent chance of success which this method offers to the subjects of such stones—a certain, but still only small, proportion of deaths must be expected. The rate of mortality will correspond with augmentation in the size of the stone and with the amount of existing disease, and age on the part of the patient. Given a small stone in a fairly healthy person and success is certain, the possibility of contingency in such a case depending only on the presence of those remote and excessively rare conditions which will make for an individual here and there the mere passing of a catheter a cause of death. The rule observed had been, for the most part, to apply lithotrity to all calculi obviously less than an ounce in weight, easily discoverable by sounding, and to operate on all larger ones by lithotomy. ('Lancet,' June 4, 1870.)

Perineal lithotrity.—Prof. Dolbeau's operation.—In the 'Brit. Med. Journ.,' Dec. 25, 1869, it is stated by the Paris correspondent that M. Dolbeau had had twenty-one successful cases and only one fatal one. An incision is made in the perineum, and the membranous portion of the urethra opened, and then the stone crushed with a lithotrite. The recoveries have been rapid, and without fistulæ remaining. The patient who died was an old man, and in all probability his death was but indi-

rectly due to the operation. At the post-mortem no unusual local conditions were found. The patient had made an attempt to hang or strangle himself after the operation.

Peri-nephritic abscess.—In the 'Medical Times and Gazette,' Sept. 24, 1870, is a narrative of a case of peri-nephritic abscess under care at King's College Hospital (Mr. Wood), with remarks by Dr. Duffin, which contain a complete summary of the literature of the subject. Particular attention is called to the peculiar form of lameness which set in; it was noted when the patient first applied. "This attitude of the limb of the affected side has not hitherto attracted the attention in this country which it appears to merit. In none of our standard works is any allusion made to it." With reference to the question of surgical interference, it is said that the results of puncture through the loin at an early date have been so favorable as to strongly recommend this method of treatment. Of seventeen instances thus treated, fifteen did well. One of the fatal cases was of puerperal origin, and was complicated with abscesses elsewhere; in the other the man was convalescent after the puncture of an enormous abscess, but exposed himself to cold and got peritonitis. Mr. Wood is of opinion that there are evident anatomical reasons for preferring, as the seat of puncture, the groove at the outer edge of the erector spinæ muscles, between them and the quadratus lumborum, as in the operation for opening the colon. A vertical incision, about an inch in length, placed about an inch and a half above the crest of the ilium, will be sufficient to afford a free exit for matter, whether with or without admixture of urine. The aperture is best kept open by a Chassaignac's tube.

Dr. Bowditch narrates nine cases. He insists on the danger of chest complications, and the importance, in all cases, of looking for them; and the importance of tapping the abscess. Two cases were simple, and the tapping led to complete cure. In three the tumour was deep-seated, not distinctly fluctuating, not apparently "ripe," yet in all of them the operation was of great service. In two no matter was obtained at the time of the operation, but suppuration was afterwards established and the tumour "melted away." In one case, though matter was obtained at the time, considerable swelling remained. In two, no operation was performed, and one died and the other is the subject of incurable disease. A bistoury was used in five cases, in one of which severe secondary hæmorrhage occurred. In two a trocar was used. He considers the bistoury more dangerous (as regards hæmorrhage), but more speedy. ('Reports Boston City Hospital, 1870,' pp. 1—69.)

Renal calculus.—In a paper in the 'Medico-Chirurgical Trans.,' liv, 211, Mr. Thomas Smith advocates the performance of nephrotomy in the treatment of calculus in the kidney.

Nephrotomy.—In the 'Deutsche Klinik,' April 10, 1870, is an account of a case of successful nephrotomy by Prof. Simon of Heidelberg. The patient was a woman, æt. 46, who had previously undergone ovariotomy, combined with hysterotomy and division of the left ureter. An ab-

dominal uretral fistula remained for which Prof. Simon performed nephrotomy in Aug. 1869. The peritoneum was not incised. The patient left her bed in six weeks. The ligatures of the pedicle did not come away for six months; but at that time the wound thoroughly healed. ('Edin. Med. Journ.,' May, 1870.)

A case in which Mr. Bryant made an incision in the loin, exposed the kidney, and then incised it, is noted in the 'Lancet,' July 2, Aug. 27, 1870.

Mr. Annandale slit up a sinus in the loin, and removed a calculus weighing seventy-two grains. Patient recovered. ('Edin. Med. Journ.,' xv, p. 21.)

Radical cure of hydrocele by seton.—Mr. H. Smith writes on this point ('Med. Times and Gaz.,' Nov. 5, 1870.) He passes a seton through the tumour and allows the fluid slowly to drain away. The plan is useful for out-patients.

Mr. Holthouse relates a case of inguinal hydrocele in a man, æt. 48, which possessed additional interest from being accompanied by symptoms mistaken for those of hernia. ('Clin. Soc. Trans.,' iii, p. 109.)

Phymosis.—Dr. Cruise employs sudden dilatation of the prepuce by means of forceps, in the treatment of phymosis. Figures of the forceps are given. ('Dub. Quart. Journ.,' Nov., 1869.)

Perineal section.—Mr. Wheelhouse writes on this subject. He recommends that a grooved staff instead of a catheter should be used, as easier to cut on; that the knife should be entered in the perineum with its back to the rectum, and the urethra exposed by a cut upwards. An incision should then be made into the urethra in front of the point of the staff, not on it. This having been done, the edges of the urethra should be held open and the staff turned so that its point projects from the wound, thus helping to steady the urethra. The roof of the urethra ought now to be quite evident, and a small grooved director can be passed through the strictured portion, with a few touches of the knife to help. Having reached the dilated part of the urethra, the director can then be passed on into the bladder, and, if necessary, a blunt bistoury can be passed along the groove and the urethra enlarged for a short distance. A catheter ought now to slip along the groove of the director. Mr. Teale's "probe dilator" is very useful for insuring a broad, metallic floor for the introduction of a large catheter. ('Brit. Med. Journ.,' Feb. 5, 1870.)

In all cases of urinary fistula, or of lithotomy, or in any case in which there is an abnormal outlet for the urine, Mr. Heslop advocates the use of a catheter with a long india-rubber tube attached so as to insure the constant outflow of urine. He urges that putting a plug into the catheter always allows of a certain amount of dilatation of a fistula by the accumulation of urine. After lithotomy he immediately inserts a catheter with tube, and, thus, gets rapid union of the wound, not a drop of urine passing through it from the time of the operation, ('Brit. Med. Journal,' June 19, 1869.)

Testis.—A specimen of fibroid deposit in testis and coverings is described by Mr. Curling. ('Path. Trans.,' xx, p. 249.)

A case of recurrent cytic disease of testis is described ('Path. Trans.,' xx, p. 331) by Mr. De Morgan.

Rupture of the Ureter.—Mr. Poland narrates the case of a woman who lived six days after a rupture of the ureter. He quotes three other cases, and two of gunshot injuries to the ureter. ('Guy's Hosp. Rep.,' xiv, p. 85.)

Gangrene of the Penis.—In an article in the 'Archives Générales de Médecine,' for May, 1870, M. Demarquay shows that it is remarkable that gangrene of the penis has not been made the subject of a special treatise, although it is not rare, and has been mentioned by writers from Hippocrates downwards. He has met with the records of twenty-five cases. The seat of the disease varies; generally the prepuce alone is affected. The integument of the penis may become gangrenous as far as the base of the organ. The disorganization may extend to the groin and umbilicus; the glans, urethra, and corpora cavernosa may become sphacelated either partly or (very seldom) entirely. Forestus cites an instance of gangrene of the whole penis, which was removed in a poultice applied to the part. The spongy-tissue and a part of the corpus cavernosum may be destroyed, the skin presenting no manifestation of disease beyond a fistulous opening. Generally, however, the subcutaneous cellular tissue is attacked, and mortification of the skin soon follows. Gangrene of the penis is more rarely of the dry than of the moist form. Sphacelus, or total destruction of the organ, has been observed in a very few cases; it is always connected with some constitutional condition or special cause affecting the whole organ. The causes of gangrene of the penis are usually local. As to age, the disease is, contrary to what might be at first expected, almost as frequent in the very young and the old as in the adolescent and adult: in early childhood, it is especially observed in cases of exanthematous febrile disease; while, in the old, the cause is almost always local. A soft, lymphatic constitution seems to offer a peculiar disposition to gangrene; and, on the other hand, it occurs in individuals of robust sanguineous habit. There must, then, be some immediate determining cause. Among causes of this kind are certain diseases which, affecting the whole body, attack the genital organs at the same time—such as fevers and poison diseases. Scarlatina and small-pox have long been known to produce this result; and Hippocrates speaks of an "erysipelato-putrid" constitution as favouring the production of gangrene. Rostan has described a case in which gangrene of the prepuce occurred in a young and vigorous subject, during convalescence from confluent small-pox. Boyer relates three cases of gangrene occurring in the course of blennorrhœa complicated with typhoid fever. In one case there was sphacelus of the prepuce alone; in another, the glans and a portion of the corpus cavernosum were attacked; in the third, there was sphacelus of the entire organ. "We must, however," M. Demarquay observes, "be careful in reasoning on such cases; inasmuch as the condition described as typhoid fever

may have been, in reality, the prostrate adynamic state resulting from the gangrene, and not the cause of this." Sometimes, however, it is otherwise. M. Farwel has related the case of a young man, æt. twenty-two, who came under his care with well-marked typhoid fever: at the end of the second week, œdema of the penis occurred, and was followed by gangrene of the prepuce and of the circumference of the penis for about five centimètres: the patient recovered. Erysipelas may produce gangrene of the penis: it is rarely, however, simple, spontaneous erysipelas; most commonly there is a wound or concomitant inflammation. It is especially met with as a result of operations in the vicinity of the penis. Gangrene of the glans has been observed in the course of glanderous affections (Vidal de Cassis). Ergot of rye may also produce it; but M. Demarquay has not met with a case.

Local causes have always an active share in the production of gangrene of the penis. The ancients explained all cases by reference to the effects of cold or heat; but this explanation is now held insufficient. Phimosis has long been recognised as a cause of gangrene. Ambroise Paré recommended amputation in such cases as the only means of saving the patient. Fortunately, however, death from gangrene caused by phimosis is very rare. In cases of phimosis, of balanitis, or of chancre beneath the prepuce, the secretions accumulating under the prepuce become changed, and produce irritation and inflammation, and, ultimately, gangrene of the prepuce and even of the glans. An operation for the cure of phimosis is sometimes followed by gangrene. Paraphimosis also favours the production of gangrene of the penis: masturbation also has been said to have the same result—most probably by inducing paraphimosis.

The traumatic causes of gangrene of the penis are numerous; among these are such as a ring or ligature applied to the organ; a calculus arrested in the urethra, or a foreign body introduced into the canal; and wounds of the organ. Cases of constriction of the penis by a ring or ligature are numerous. The fixing of a catheter or sound in the urethra is sometimes followed by gangrene. This generally occurs in old persons: it may arise either from the too tight tying in of the catheter, or from a generally debilitated state of the patient. Gangrene from the arrest of a foreign body in the urethra may take place at any age. The occurrence is rare; M. Demarquay has seen only one case, that of a man on whom he performed lithotrity, and in whom a fragment of calculus became lodged in the anterior part of the urethra. Dr. Gaspard, of Fransac, has related the case of a man who introduced beans into his urethra; retention of urine and inflammatory symptoms followed, but the most prominent condition was gangrene, which invaded the entire penis and the scrotum. Both patients in the two last-mentioned cases died. Chancres or other ulcers of the penis may produce gangrene; in such cases the work of destruction is rapid, and it is not rare to see a large extent of surface rapidly mortified. The most common wounds, however, which produce gangrene are those where the vessels are divided by a cutting instrument. Dr. Vedrènes has related the case of a Kabyle, whose wife, a week after marriage, cut his penis across at the base, dividing the cavernous body and the greater part of

the circumference of the urethra. The injury was followed by dry gangrene of the glans and urethra; the patient, however, survived, and nine years afterwards was in good health, and the father of a family. In contused wounds of the penis, the contusion, rupture, and occasional attrition of the parts are more than sufficient to produce gangrene. At the commencement of his medical studies, M. Demarquay saw in M. Blandin's ward a man whose penis had become gangrenous by being twisted during erection: there must have been here a rupture of the fibrous as well as of the vascular structures. Priapism in man is not generally attended with gangrene; at least, M. Demarquay has not met with any case in the human subject like that recorded by Hunter, where gangrene followed priapism in a dog.

Inflammation is a necessary feature in the production of gangrene from traumatic causes; but it may, when occurring spontaneously, itself induce gangrene. The forms of inflammation which may thus act are, simple balano-posthitis, phlebitis of the vena dorsalis, and penitis. Gangrene after balano-posthitis is rare, but is more likely to occur when the surface of the glans or of the prepuce is covered with ulcers. The disease is then limited to the prepuce and the furrow of the penis; but in the latter case it is rather the result of phlebitis of the vena dorsalis, produced, it may be, by the abortive treatment of blennorrhœa. There may be penitis, destroying the whole organ: this is especially observed in gastro-enterite or typhoid. The urethra may become perforated as the result of ulceration following inflammation; or it may be lacerated from over-distension behind a stricture, or by the making of a false passage in catheterism, or from the detachment of an eschar. The urine then escapes into the cellular tissue of the perineum, scrotum, and penis, perhaps reaching the groins and lower part of the abdomen. How does the urine act? M. Demarquay asserts that urea is of itself not capable of producing gangrene. He has injected urea into the cellular tissue of rabbits, in quantities varying from two to twenty grammes; when the animals died soon, the only phenomena found were those of inflammation; the remainder of the animals died after a longer or shorter interval, in a state of extreme emaciation. Epispadias, and still more hypospadias, may lead indirectly to the production of gangrene, through the injuries which the subjects may inflict on themselves in passing catheters, &c.

Symptoms.—The symptomatology of gangrene of the penis is difficult; but three stages may be described. In the first stage the skin becomes gradually relaxed; there is slight œdema, which retains the impression of the finger; the skin becomes pale, sensibility diminishes, there is no pain, and the temperature falls. Next, phlyctenæ are formed in varying numbers, and are soon more or less filled with a yellowish or reddish fluid. The gangrene then makes rapid progress; the sensibility of the skin diminishes, the temperature falls still lower, and the parts become black. The sphacelated mass may be soft or hard; it shrivels up, and sometimes presents, generally about the tenth day, a line of demarcation; the general symptoms, at the same time, proceed with an intensity proportioned to the severity and extent of the gangrene. Fever sets in; the tongue becomes dry and foul; the pulse rapid, small, and

compressible; the breathing accelerated, sometimes anxious. It is not rare to see œdema of the lower limbs, diarrhœa, insomnia, delirium, and even coma. In certain cases special symptoms are produced. The progress of the disease may be so rapid as to soon put an end to symptoms which appeared likely to continue several weeks. Thus, in some cases, injury of the urethra by a bistoury, or by the falling off of an eschar, does not interrupt the course of gangrene; while, in others, the disease terminates by producing a fistulous opening of the urethra. In a case communicated to M. Demarquay by Dr. Angé, there was circumscribed gangrene of the penis from paraphimosis; in detaching some eschars the urethra was laid open; some weeks later the fistula healed. This fortunate result, however, did not occur in a somewhat similar case recorded by Boerhaave.

The *complications* which may attend gangrene of the penis are various. Among them M. Demarquay mentions urinary infiltration and its results, purulent infection, orchitis, and hæmorrhage either from the detachment of sloughs, or from the progress of the mortification. He relates a case of fatal hæmorrhage which followed detachment of the slough in a case of partial gangrene of the penis under his care in the early part of 1870.

The *duration* of gangrene of the penis is usually short, the development of the disease occupying nine days only; sometimes, however, where the sheath of the corpora cavernosa has been attacked, it may continue for weeks or months. When symptoms of purulent infection have been present, in the form of frequent rigors, the disease is of longer duration and convalescence is slow. In some cases, there has been a very successful recovery. The glans having been thrown off, the conical surface of the corpora cavernosa has become covered with granulations, and, with the aid of caustics, a kind of glans, though short, has been formed. In several instances, too, its tegumentary sensibility has become so far developed as to allow sensations almost similar to those felt before the occurrence of the disease. DeLavacherie, of Liège, relates a case where a true glans was reproduced. M. Demarquay, however, believes that here a portion of the spongy-tissue of the original glans was left, and served as a basis for proliferation.

The *diagnosis* of gangrene of the penis is not difficult; what is required to be known is the extent of the disease. The line of demarcation, when present, shows the limit. Sometimes, as in penitis, the only external sign of sphacelus is a small hole through which the gangrenous portions of the fibrous sheath of the corpora cavernosa escape. In phymosis the existence of gangrene of the glans cannot be diagnosed until the prepuce has been cut open. In order to ascertain the depth to which the gangrene has extended, the tissues must be cut into till pain and a slight flow of blood are produced.

The *prognosis* must be made with reserve, as recovery has taken place in very unpromising conditions. It depends on the nature of the injury, its extent, and on the depth to which it has invaded the tissues. The loss of the prepuce is of no importance, except that it diminishes the sensibility of the glans. When one corpus cavernosum, only, has become gangrenous, the loss is replaced by cicatricial tissue; in con-

sequence of which, during erection, the penis is bent towards the side which has been diseased, so that the genital function is greatly interfered with. The prognosis is essentially modified by the complications of the disease, such as rigors, &c.

The indications of *treatment* are: (1) To prevent gangrene when it is imminent; (2) To arrest its progress when it has only commenced; (3) To extirpate it completely when it is fully developed.

1. Gangrene may generally be prevented by promoting the circulation through the blood-vessels and lymphatics. More or less deep scarification will relieve the swollen tissues, and aid in preventing the formation of phlyctenæ and of islets of sphacelus. In such cases there may be considerable hæmorrhage; the surgeon should therefore introduce, between the lips of the wound, charpie, either simple or dipped in an aromatic wine. Blood letting is sometimes, but rarely, necessary. Cooling drinks are always indicated. In some cases, the consideration of the cause which has led to the gangrene will afford ground for the exercise of ingenuity on the part of the surgeon. Thus, in a case where constriction was produced by a ring, Bergeron removed a portion of the corona glandis which opposed its removal. The patient recovered in two months, after some sloughing of the prepuce and dorsum of the penis. 2. To prevent the spread of the disease when it has set in, the cautery may be used. In the case of a young man, æt. 24, admitted on account of chancre of the glans with gangrene of the prepuce, M. Demarquay succeeded in arresting the progress of the disease by slight cauterisation. Recovery was complete in twelve days. Arsenic and its preparations formerly enjoyed a certain degree of reputation; but in modern times they have been replaced by the more simple remedies of washing, fomenting, and cleansiug the wound. Gallozzi has recommended the use of citric acid; but that it does not always succeed is shown by a case in the practice of Gallozzi himself, where both it and the acid nitrate of mercury failed in limiting the spread of the gangrene, and the actual cautery had to be used to convert a gangrenous ulcer into a simple sore. 3. When the arrest of the disease has become impossible, extirpation of the sphacelated part is the only remedy. On this point, however, there is want of agreement among surgeons. Galen advised amputation of the gangrenous part, and cauterisation of the wound. According to Paré, amputation was necessary to save life in cases of gangrene of the penis. Bell and Patisuer made a distinction between cases of constitutional and of local origin, and arrived at the conclusion that there were some cases where expectant treatment was inadmissible, and art must interfere promptly. Pétrequin, of Lyons, has revived the old doctrine, and advises amputation before the formation of the line of demarcation. Bérard, Vidal, Bégin, and S. Cooper advise that the separation of the gangrenous parts be waited for. M. Demarquay, after referring to these opinions, says that when the gangrene is limited to the cutaneous investment of the penis or scrotum, operation is superfluous; it is scarcely necessary to detach the mortified parts by means of scissors. Where the gangrene arises from some general cause, this cause may still remain in operation; and the removal of the gangrenous portion by operation may be not only

useless, but may lead to further accidents. Hence M. Demarquay lays it down as a principle never to amputate the penis beyond the sphacelated portion. In other cases amputation is not always sufficient; and there are instances where, while the bistoury must be used, the continued use of mercurials is indicated. Whilst disapproving of amputating the penis before the line of demarcation has been fully formed, M. Demarquay does not oppose all operation on the organ. There are cases where gangrene is limited to certain parts, leaving others intact, but in such a condition that the performance of their functions is impossible. Such was a case under the care of Delavacherie, where gangrene attacked the sheath of the penis, the glans, corpora cavernosa, and urethra remaining intact. A new sheath was formed by a plastic operation. As the patient was lost sight of, it is not known whether this new sheath allowed the performance of the functions of the organ; but M. Demarquay considers that the want of elasticity should not be an obstacle to the performance of such an operation when required. In conclusion, he calls attention to the local use of camphorated creasote, which, he says, M. Lavit has applied with good effect.

Seminal Fluid.—M. Liégeois has written on the condition of the seminal secretion in disease ('Med. Times and Gazette,' Aug. 28, Sept. 4, 25, Oct. 30, and Nov. 6). Of seventy-two samples of semen from individuals of different ages and constitutions, exempt, however, from any disease, the absence of spermatozoa was only noticed once, and, in that case, on a subsequent occasion spermatozoa were found. Sexual excess is the common cause of diminution of quantity of spermatozoa. The recorded examples of absence may be explained by the occurrence of seminal emissions before the examination (as during sudden death), and by sexual excesses at the time. This was the explanation in the one case in which the author failed to find spermatozoa. The author "is disposed to believe that old persons, if enjoying good health, are just as apt to produce spermatozoa, as is the adolescent or the adult. It results that every man in health carries in his semen the material elements of fecundation. There still remains to be seen if these elements are endowed with motion, before giving an opinion, that the person furnishing them is fruitful."

Acute disease, except in old people, does not affect the semen. Chronic disease has little effect. Destruction of the testicle by disease, of course, deprives the semen of animalcules. Tubercular disease of one testicle is said to produce azoospermia; while cancer does not. If this be true, the absence of spermatozoa in a doubtful disease of one testicle might decide the point. The author had one case in which great diminution in quantity occurred. In epididymitis with induration the spermatazoa disappear, but return as the thickening vanishes. Of twenty-three cases the animalcules were absent in twenty-one. The practical deduction is to reduce the induration as quickly as possible. Disease of one side diminishes the amount of spermatozoa secreted from the other. The two testicles are closely united by reflex ties. Atrophy of one testis, diminishes the quantity of living elements.

Sexual excesses and constitutional diseases terminating in death are the two most active factors in producing azoospermia. The semen of the only cryptorchid examined, contained no spermatozoa.

Tannin and Glycerine in Gonorrhœa.—Dr. Schuster states that tannin mixed with glycerine, at first forms a soft, waxy substance, which soon becomes hard and brown, and melts in a moist atmosphere at the temperature of the body. Dr. Schuster has formed small pencils of this compound, which he inserts into the urethra of patients suffering from gonorrhœa. They are from three to four inches in length, well rounded at the extremities, and consist of thirty grains of tannin, one grain of powdered opium, and a sufficient quantity of glycerine to form a pastile. Before their introduction they should be dipped in warm water. They should be left in the urethra five or ten minutes.—('Lancet,' Oct. 8, 1870.)

Chronic Gonorrhœa.—Mr. Hill has had great success in the use of injections of glycerine of tannin. The formula being glycerine of tannin, three ounces, olive oil and mucilage, of each one ounce. About two drachms to be used each time.—('Lancet,' March 28, 1869.)

Syphilis and Tubercle.—Two papers on the relation between syphilis and tubercle, will be found in 'Med. Times and Gazette,' Nov. 20, 27, 1869, by M. Lebert. "Syphilitic infection is not only able to develop an existing predisposition to tubercle, but it can cause tuberculosis without any such predisposition."

Subcutaneous Injections in Syphilis.—Dr. T. J. Walker writes on the subcutaneous injection of salts of mercury in the treatment of syphilis. ('Brit. Med. Journ.,' July 10, and Dec. 4, 1869.) Dr. Oppert brought forward notes of cases illustrating the treatment of syphilis by the use of hypodermic injections. ('Clin. Soc. Trans.' iii, p. 42.)

Inoculations.—Mr. Morgan has been practising inoculations, from vaginal discharges, in cases of syphilis. He thinks this discharge more efficacious than that of a chancre, and it can be obtained after the disappearance of the latter. ('Dub. Quart. Journ.,' Aug. 1870.)

Hereditary Syphilis.—Mr. Bartlett notes a case of hereditary syphilis, in which paralysis of both arms occurred. The patient was a female aged three months. ('Clin. Soc. Trans.,' iii. p. 33.)

Recurrent Herpes Preputialis.—M. Doyon, writing on this subject, states that it uniformly follows some primary venereal affection, dies away and then recurs, it may be for years. It is more frequently a sequel of chancroid than of gonorrhœa, and of this, than of true chancre. The group of vesicles appears in close proximity to the primary chancre. ('Lancet,' Feb. 13, 1869.)

Compression of the brain.—A remarkable case of this kind is recorded by Mr. John Adams in the 'Lancet,' March 27, 1869. A man, æt. 37, received a blow from a man's fist near the left ear; he became insen-

sible, and had bleeding from the same ear. Paralysis of the right side gradually came on and steadily increased. He lived for a week. A fissure fracture severing the meningeal artery was found, and a large clot in the left middle fossa outside the dura mater.

Hernia cerebri.—Mr. Lawson exhibited to the Pathological Society a lad in whom a pulsating elastic tumour appeared suddenly six weeks after a trephining in the frontal region. The lad had appeared quite well till this came. A puncture was made with a lancet, and clear fluid let out; this continued to drain away for three days, when it ceased, and no further ill symptoms occurred. ('Trans.,' xxi, p. 311.)

Abscess of brain.—Mr. de Morgan records the case of a man, æt. 44, who came under care June 22, for an injury to the head from a fall. There was bleeding from the right ear. From that time till July 13 he passed through the stages of semi-consciousness, restlessness, and convalescence. On the 27th, however, he had a convulsion; then he complained of pain in the head, shivering, &c., passing on to coma on the 17th, with paralysis of the left side. Then he improved till August 3, when he had pain in the head again. On the 11th he became insensible, and died on the 12th. At the post-mortem, a linear fracture of the base of the skull was found, and a large abscess of the middle lobe, which had burst into the lateral ventricle. ('Clin. Soc. Trans.,' iii, p. 17.)

The case of a lad who died, of cerebral abscess, five years after a severe injury to the head, is detailed by Dr. S. Lawrence, p. 602, 'Edin. Med. Journal,' Jan. 1869.

Dr. P. H. Watson narrates the case of a girl, æt. 8, who was struck on the head with a stone nine months before she came under care. A wound was produced which healed up, but subsequently reopened. At times she became unconscious and convulsed, but was always relieved by the escape of matter. Examination with a probe showed a small aperture leading to a cavity at least two and a half inches deep, and on withdrawal of the probe pus escaped. Dr. Watson determined to trephine. In performing this operation he dispensed with the use of the centre pin, by first of all cutting a piece of cardboard with the trephine, and then placing this on the skull to steady the instrument till it bit. After the removal of a circle of bone, nearly a wine-glassful of pus escaped. The abscess was clearly intra-membranous, and there was no evidence of necrosed bone, or of there having been a punctured fracture. If the wound was allowed to heal, collection of matter occurred, and the child became gradually somnolent; a probe passed daily obviated this difficulty. Ultimately she did quite well. Dr. Watson is not in favour of primary trephining without the occurrence of symptoms necessarily demanding interference. He cites three cases showing favourable progress, without interference, till after some time; one case was that of a soldier, in whom rigors, headache, &c., occurred some weeks after a gunshot wound of the head. "On laying open the wound to examine the skull at one point, where the bone was bare, a small tuft of hair, like a hair-pencil, stuck right up from the surface, being held and wedged in

that position by a minute fissure of the bone, which was so close that, but for the tuft of hair, it could not be recognised. The application of the trephine evacuated an intra-cranial and extra-membranous abscess, and, lying on the dura-mater, was a thin flake of lead like a flattened shot pellet, which had obviously been shaved off the passing ball, by which the fracture and temporary depression of the bone had been produced, and by which the tuft of hair had been introduced." In a second case, some weeks after a gunshot wound, trephining gave exit to a quantity of pus, and, also, led to the discovery of a ball lodged in the left hemisphere. The third case was that of a student, who received a punctured wound of the skull in a row. For three weeks he attended "classes," then headache and sleeplessness came on. On examination, a wound through the skull was found, and a probe came in contact with a piece of loose, bare bone. After the removal of this some pent-up matter escaped. "With such experiences, and with the well-known results of interference and non-interference, as observed in the Schleswig-Holstein campaign, in the Prusso-Austrian campaign, and in the American civil war, I acknowledge I am much inclined to recommend non-interference in all cases of cranial injury, even of the punctured kind; except, indeed, in those cases where some very plain and obvious indication for interference presses itself upon the attention of the surgeon." ('Edin. Med. Journ.,' July, 1870.)

Brain Shocks.—Mr. Callender writes on the anatomy of brain shocks (Barth. Hosp. Rep. v., p. 3 to 45), in continuation of a former communication. We can only quote his brief summary, p. 42. "It seems to me the following points deserve attention:—1. The rapidly fatal results which followed bleeding into (*a*), the pons; (*b*), the ventricles; (*c*), the surface of the brain. 2. The rapidly fatal results of bleeding into the right hemisphere, outside the thalamus and corpus striatum, as compared with bleeding into the corresponding parts of the left side. 3. The condition of the pupils, which in the great majority of cases are fixed midway between the extremes of contraction and of dilatation. 4. The small number of cases in which vision is affected, including cases in which both sides of the brain happen to be diseased or injured. 5. The occurrence of pain in connexion with affections of the outer grey matter of the brain; its absence in all cases of bleeding into the substance of the corpora striata, or optic thalami, or both. 6. The general agreement of these cases with the propositions—that with loss of speech (*a*), the anterior cerebral lobes, or the parts about the corpus striatum or the motor tract are diseased or injured; (*b*), that such disease or injury involves the left side; (*c*), that whilst the parts about the corpus striatum are found to be diseased, it is not evident that the disease or injury is limited in these cases to the third parietal convolution (so called). 7. The comparative recovery of speech during the stage of delirium. 8. The association of convulsions (*a*), with disease about the track or distribution of great vessels, especially of the middle cerebral arteries; (*b*), with the shock of a hœmorrhage. 9. The connexion of convulsions with left sided paralysis, and with disease of the right hemisphere external to the optic thalamus and corpus striatum.

Trephining of Tibia for acute Abscess.—The pain was intense. Iodide of potassium was given without good effect. The disease, threatened to set up suppurative inflammation in the knee-joint. M. Péan determined to trephine, though the affection had only lasted a few weeks. He opened a cavity containing pus, and from that time the pain vanished, and the swelling of the knee-joint subsided. (Gazette Médicale de Paris.)

Abscess in Bone.—A summary of various published opinions and cases on this subject, will be found in the Amer. Journ. Med. Sciences (Oct. 1869), from the pen of Dr. Blackman. He shows that Sir B. Brodie was not the only surgeon, nor the first, to trephine for abscess.

Caries treated by Caustic Potash.—Mr. Holmes showed specimens from a patient with disease of the bones of the ankle. Treatment by the local application of potassa *cum* calce had been tried. The patient died of pyæmia. (Path. Trans. xxi., p. 318.)

Use of Sulphuric Acid in diseased Bone. — Mr. Pollock says that although most are familiar with the effects produced by soaking bone in the strong mineral acids, very little use has been made of them in practice. "As a local application for the more speedy removal of dying bone, or for the more rapid separation of dead bone, or for the destruction of the surface of a carious cavity, and the disintegration of all the diseased bone lying therein, sulphuric acid does not appear to have been so generally appreciated as it deserves, nor are its effects sufficiently known. It possesses the advantages of being a very simple and perfectly safe application for the purposes mentioned; is thoroughly antiseptic when used as a dressing for foul, diseased bone cavities; is comparatively painless when applied to carious bones; and is seldom productive of any irritation in the surrounding soft structures." The author's attention was first called to its use in a case of extensive necrosis of the skull. The exposed bone was touched daily with a lotion of equal parts of strong sulphuric acid and water. This greatly accelerated the separation of the whole of the diseased bone, and the patient perfectly recovered without any portion of necrosed bone being allowed to exfoliate by its own natural process. Four other cases in which great benefit resulted are mentioned. "In the number of cases which have now come under my notice, both in St. George's Hospital and in private practice, in no one instance have evil consequences been known to follow the application of sulphuric acid to diseased bone of any part of the body; nor has the treatment been found a painful one when the acid has been used in a diluted form (equal parts). If pain should follow the application it usually lasts but a short period; for the acid in contact with the bone soon becomes neutralised, and ceases to occasion uneasiness. When diluted, the acid does not usually affect the soft tissues, even to the extent of uneasiness, nor does it produce the slightest subsequent irritation in them. The acid may be used pure, as in some of the instances quoted. Its application had better then be confined to caries, or necrosis of the bones of the trunk when exposed,

or easily got at; and when it is desirable to destroy dying bone rapidly, or quickly to get rid of dead bone." For most purposes, a mixture of acid and water in equal parts will be found sufficiently active and efficacious, and for the skull it is not advisable to use stronger. "If employed for the destruction of carious surfaces in cavities of bones, or deep-seated carious patches on the surface of flat bones, *e. g.*, the pelvis, it will be found convenient to apply the diluted acid with lint, and either to stuff the cavity with the wetted lint, or lay the lint on the diseased patch; or the lotion may be used daily with a syringe. On the second or third day, when the lint should be taken out, the cavity in the bone will be seen lined with an opaque white layer of tissue. In a day or two more, this may be removed with a pair of forceps; it will peel off the surface of the deeper bone in the form of a more or less thick layer of tissue; it is, in fact, a soft slough from the surface of the bone from which the phosphate and carbonate of lime have been largely, if not entirely, dissolved out. If, on its removal there should still be a surface of rough bone, the application should be repeated. Usually as soon as one or two sloughs have separated, healthy granulations commence to spring up from the surface of the bone beneath, and rapidly cover the living bone with a red, velvety, vascular tissue, which growing daily soon fills the cavity, and closes the wound in the bone. When the acid is applied daily to a portion of exposed necrosed bone, the latter will be seen to disintegrate and crumble away in very small, dry fragments, or may be picked off in minute pieces like friable mortar." The application of the acid is much more expeditious than that of allowing nature to separate the bone; the period of the process of separation being reduced from many months to a few weeks. In the diluted form, the acid acts only on diseased bone, not on healthy bone. Some pieces of necrosed, diseased, and healthy bone were placed in solutions of sulphuric acid, and only the two former were affected. It is not intended that operative measures will be by any means superseded, except in a certain number of cases. ('Lancet,' May 28, 1870.)

Hydatids of the Humerus.—M. Demarquay records the case of a man, æt. 53, who had served in the army and had been wounded in the arm six years before. After the extraction of the bullet, the wound soon healed. Four years afterwards, pain, abscess, and necrosis ensued. On examination no sequestrum was found, but a cavity, the walls of which were scraped and gouged. On microscopic examination of the wall of this cavity, it was found to consist of hydatid membrane, and some hooklets were found. ('Gazette des Hôpitaux,' No. 19, 1869.)

Necrosis of Scull and Scalp.—Mr. Thomas Smith notes the case of a child, æt. 9, in whom necrosis of a large portion of the vault of the skull and of the scalp covering it, occurred simultaneously. ('Clin. Soc. Trans.,' iii, p. 163.)

Necrosis of the Femur.—A case of necrosis of the femur, in a girl æt. 19, without external inflammation, produced probably by breaking

sticks over the thigh, is narrated by Mr. Paget (' Clin. Soc. Trans.,' iii, p. 183). A sequestrum was removed by operation.

A case of wasting of part of the tongue, in connexion with necrosis of the occipital bone, is narrated by Mr. Paget. (' Clin. Soc. Trans.,' iii, p. 238.)

Dr. Brotherston mentions the case of a man from the centre of whose frontal bone a sequestrum was removed twenty-eight years after the commencement of the disease. The sequestrum probably included the whole thickness of the skull, and was wedged in so that it could not separate spontaneously. (' Ed. Med. Journ.,' Jan., 1870.)

Rickets.—Mr. Marsh has practised the forcible straightening of rickets of bones, under chloroform, in young children, with advantage. (' St. Barth. Hosp. Rep.,' vi, p. 124.)

Fracture in Syphilis.—In the ' Brit. Med. Journ.,' April 17th, 1869, Dr. Elliot publishes a narrative of a case of fracture of the humerus, without known violence, in a syphilitic patient. The bone was obtained at a later period, and woodcuts of its appearance are given. Briefly, the changes were those of interstitial absorption in many parts and also of condensation in others. The bone became enlarged, but not strengthened.

Regeneration of Bone.—Mr. Wilkes removed nearly half of the humerus and the elbow-joint of a lad, twelve years old, six weeks after compound fracture. A useful limb was obtained. Illustrations are given. (' Path. Trans.,' xxi, p. 313.)

Mr. Marsh records a case in which he removed eight inches of the shaft of the femur of a boy nine years old. The bone was divided with a chain saw, and the lower portion extracted. Three months later, the upper half was removed. At the end of nine months the shaft was perfectly firm. The limb was three-quarters of an inch shorter than its fellow. (' St. Barth. Hosp. Rep.,' vi, p. 126.)

Dr. Cheever gives cases of reproduction of tibia: in a girl, æt. 13 (with figures), and in a girl, æt. 8. (' Bost. City Hosp. Rep.,' 1870, p. 392.)

Relative Frequency of Caries.—The twelfth volume of ' Langenbeck's Archiv für Klinische Chirurgie,' 1870, contains, at p. 314, an elaborate article, by Drs. Billroth and Menzel, on the relative frequency of caries in different bones, and on the combination of chronic inflammation of bones, with tuberculosis and other chronic diseases of internal organs. The remarks are founded on the statistics, compiled by Dr. Menzel and Dr. Perco, of the records of the necropsies in 2106 cases of chronic inflammation of the bone, made in the Vienna General Hospital, from 1817 to 1867. The total number of necropsies recorded was 52256. Of the 2106 cases, 1996 were instances of caries and 100 of necrosis. The latter were distributed as follows: skull and facial bones, 21; sternum, clavicle, and ribs, 16; scapula, 5; humerus (shaft), 5; pelvis, 17; femur (shaft), 21; tibia (shaft), 20; fibula, 2. It is to be observed, however, that death from necrosis rarely occurs in hospital; and hence

that the numbers do not give an accurate idea of the relative frequency of the disease in different bones. The frequency with which caries was met with in different parts of the skeleton was as follows: head and vertebral column, 1091; upper limbs, 185; lower limbs, 720. With regard to individual bones, the numbers were: skull and facial bones, 205; vertebral column, 702; sternum, clavicle, and ribs, 184; scapula, 4; shoulder-joint, 28; humerus (shaft), 13; elbow-joint, 93; radius (shaft), 2; ulna (shaft), 4; wrist and hand, 41; pelvis, 80; hip-joint, 189; femur (shaft), 31; knee-joint, 238; tibia (shaft), 30; fibula, 2; ankle-joint and foot, 150. In the spinal column the distribution was: cervical vertebræ, 185; dorsal vertebræ, 310; lumbar vertebræ, 199; and in eight instances the exact seat of disease was not stated. In 577 cases the individual vertebræ diseased are specified, and a table of curves, showing the relative frequency, is given. The vertebræ most frequently diseased were the axis (99 cases) and the sixth dorsal (80); then followed the fifth dorsal (75), the atlas (73), the eighth dorsal (72), and the seventh dorsal (71); next came the third cervical, the third, fourth. ninth, and tenth dorsal, and the fourth lumbar, with numbers ranging from 62 to 66. It is difficult to account for these differences; but the statistics go to show that the upper and middle parts of the vertebral column are more liable to chronic ostitis and periostitis, induced by mechanical or functional irritation, and kept up by the constitutional (scrofulous) condition of the patient. The great frequency of caries of the skull is not surprising, and calls for no special remark. Of the 205 cases of caries of the skull and face, in 161 the disease was in the cranial bones, and in 44 in the facial. Among the latter were many cases of disease of the hard palate and nasal bones, mostly attributable to syphilis. There were 100 cases of caries of the petrous bone (on both sides in 5); in 30 of these there were thromboses in the transverse sinus; in 41 there were metastatic abscesses in the internal organs, and purulent meningitis in 40; of the remaining 61 cases of caries of the skull, most were due to syphilis. Most of the cases of caries of the ribs were of scrofulous origin; in the sternum and clavicle the disease was generally due to syphilis.

Billroth believes that the numbers above given fairly represent the relative frequency of caries in the various bones. He points out, however, that some qualification is necessary, from the fact that there are no wards for children in the General Hospital, there being special children's hospitals; and that, as many children suffering from caries of the spine and lower limbs are brought into these hospitals and die there, the relative frequency of the disease in these parts of the body would be still greater than shown in the figures if the cases of children dying of caries could be taken into the account. Further, persons affected with chronic bone disease of the upper limbs come into hospital in much smaller number than those who have caries of the spine, pelvis, and lower limbs; and of the former, it is mostly those who are phthisical that come under observation. A certain number of children also came into hospital with caries of the hand, and many of them recovered. Hence, probably, the proportion of cases of caries in the upper limbs is greater than that represented in the figures. When, however, the deficiency

already referred to in regard to the lower limbs is taken into account, the general result of the statistics may be taken as fairly correct.

In twenty-two per cent. of all the cases, no chronic disease of internal organs is recorded. In many of these instances there was marked anæmia without evident internal disease. It is not to be inferred that this was absent in all, for it may exist in a state which cannot be detected by the naked eye.

In 26·1 per cent. of the cases there was a considerable amount of internal disease. The coincidence is too frequent to be regarded as a mere accident, and yet not so marked that too much weight should be attached to it.

Caries of the lower limbs appears especially to be attended with chronic induration and fatty disease of the abdominal organs. This is, perhaps, to be explained by the circumstance that patients with caries of the lower limbs are laid up early, and often for a long time; so that the development of disease in the abdominal organs is directly or indirectly favoured by the impairment of digestion. It may also be supposed that morbid material is carried from the denuded parts by the lymphatic vessels, and either deposited directly from them at the nearest point, or elaborated in and deposited from the blood. It must also be borne in mind that many of the patients suffered from other diseases, such as pulmonary tubercle, and that, therefore, all the deaths must not be attributed to disease diffused through the abdominal viscera.

In speaking of the occurrence of cheesy deposits, ulcerations, caverns, and tubercles, Dr. Billroth remarks that in the term cheesy deposit he includes ulceration and caverns, but not the cheesy deposits, chronic abscesses, and fistulæ, which are directly connected with the caries as local results. Cheesy deposits in internal organs were found in 54·2 per cent., or more than half, of all the cases. This proportion is large, and it would be still more remarkable if all the cases of death from profuse suppuration, from acute disease, from the sequelæ of operations, &c., could be deducted from the total sum. The percentage of cheesy deposits in caries of the lower limbs was 53·1; in the head and trunk, 54·6; in the upper limbs, 56·9; the variation from the average, 54·2, being in none of those cases remarkable. But, in estimating the proportions with regard to individual bones, omitting those which furnished only a small number of cases of disease, the following results are found:—Shoulder-joint, 77·7 per cent.; bones of the chest, 65·5; ankle, 64; knee, 62·6; elbow, 62·3; vertebral column, 56·8; wrist, 51·2; pelvic bones, 50·5; hip, 47·5; tibia, 38; skull and facial bones, 33·6. The interpretation of these proportions, Dr. Billroth remarks, is difficult. If it be assumed that the poisonous matter is absorbed from cheesy, ulcerated deposits by the lymphatic vessels, and, being gradually deposited in internal organs, gives rise to cheesy deposits in them, it may be considered that the great propinquity of the shoulder and bones of the chest to the lungs would readily lead to disease in these organs; and it is to be observed, that in a majority of the cases under notice the deposit was in the lungs. Dr. Billroth remarks, in passing, that the diffused diseases of the abdominal organs frequently

found in cases of caries of the shoulder may be regarded as the result of the disease in the lungs, and as, therefore, having a far less direct connection with the disease in the bones than that which attends caries of the pelvis and lower limbs.

It is known that cases not unfrequently occur in which grey tubercle, apparently the result of contagion, is found in the immediate neighbourhood of cheesy deposits; on the other hand, cheesy deposits are found around carious joints, which may possibly be explained in the same way as the results of inoculation in animals. Thus, in one case of coxalgia with dislocation, there were deposits of red tubercle in the muscles and tendons of the thigh; and, in another, of caries of the elbow, tubercle was deposited in the muscles near the joint.

In cases of disease of the knee and ankle, it is difficult to explain the occurrence of deposits in internal organs by the theory of conveyance through the lymphatics; for, while these joints are farthest removed from the lungs, caries of them is attended with tuberculous deposit nearly as frequently as caries of the spine or of the elbow. In the case of the foot, the infection must be transmitted through the medium of the inguinal and pelvic lymphatic glands.

The occurrence of cheesy deposits in combination with caries, without any trace of true tubercle, is rare. Much more rare is the combination of miliary tubercle with caries, without cheesy deposits; where this was found, the tubercle was generally in the peritoneum.

Dr. Billroth believes that caries alone very seldom leads to tuberculosis by infection, but comes into close relation with it only through its frequent concurrence with cheesy deposits in other parts of the body; such concurrence not always necessarily having the relations of cause and effect, being much more probably the result of a remote cause, commonly described as the scrofulous diathesis.

Regarding the concurrence with caries of certain special diseases of internal organs, the following remarks are made:—Hydrocephalus, when met with, was mostly subacute or chronic; it occurred in 7·5 per cent. of the cases. It was most frequent in caries of the elbow, chest, hand, ankle, skull and facial bones, knee, and shoulder; occurring, therefore, mostly, in connection with caries of the upper limb. In regard to purulent meningitis, with or without tubercle, caries of the skull and of the atlas and axis are set aside, as here the disease often extends directly to the membranes of the brain. In caries of other bones, meningitis was rarely found; and the number of cases was too small to allow any conclusions to be drawn. Amyloid degeneration of the liver was found in 8 per cent of the cases; of the spleen, in 5·9 per cent.; and of the kidneys, in 4·5 per cent. Lardaceous liver was found in 8 per cent., in the following order of frequency with regard to the cases where it was above the average:—tibia, 18 per cent.; elbow, 11·8; pelvic bones, 10·3; bones of the chest, 9·5; femur, 9·5; foot and ankle, 8·6. Lardaceous disease of the spleen and of the kidneys was also met with in combination with caries of various bones. Fatty liver was found in 7 per cent; it occurred in 17·8 per cent. of the cases of caries of the shoulder, in 15·4 per cent. of those of caries of the pelvis, and in 9·6 per cent. of cases of disease of the knee. Bright's disease was most

frequently found in connection with caries of the shoulder, pelvis, wrist, ankle, elbow, tibia, spine, and hip.

Hip-joint disease.—Mr. Bryant agrees with Mr. Holmes that morbus coxæ has no necessary connexion with struma. He says it would be well to get rid of the erroneous notion that hip disease, or any other joint disease, has its origin in a constitutional cause, for, till that is effected, the local treatment is likely to be disregarded or considered as of only secondary importance, when all who have much experience in the treatment of these cases will admit that local treatment cannot be made of too prominent importance. Mr. Bryant thinks that it is very important to distinguish whether the hip disease begins in the synovial membrane or in the bone. He inclines to the opinion, from the numerous specimens of disease of the bone which may be seen in the museums, that it is anything but uncommon for the disease to begin in the bone. The clinical distinction must, in many cases, be very difficult. The points to be attended to are, first, that in synovitis of the joints effusion quickly occurs; if, therefore, some swelling can be made out, possibly even deep fluctuation, with pain on pressure on the great trochanter, the disease is probably synovial. In disease of the articular extremity of the bone, however, an aching of the part may be the only early symptom, and this may continue for a long while. There is no fulness of the affected region till the disease has existed for some time, then the end of the bone may be noticed to be enlarged, and there will be increased heat, generally intermittent. In a later stage of the disease, if synovial, pressure on the trochanter will be much better borne than if the disease be in the bone; generally movement will be better borne. If the joint disease result from an accident, the progress will be much more rapid than if it be of spontaneous origin, and all the tissues will quickly be involved. ('Med Times and Gazette,' July 3, 1869.)

Cases of articular ostitis, in which the disease was arrested by treatment in its first stage, are narrated in the number for July 17. Cases of early synovial disease, July 24. Cases of anchylosis, August 21. Cases attended with suppuration, September 18. The treatment of hip disease is discussed October 16. The chief object is stated to be to secure immobility of the joint. On the question of excision, Mr. Bryant remarks that the operation is justifiable whenever dead bone can be felt, and in severe cases where dead bone cannot be felt, but in these the prospect of cure without interference is much greater. In young life excision is by no means fatal, as two out of three get well. From ten to thirty years of age, something less than half recover; after that period it is full of danger. It should not be performed without the bones are considered extensively involved, nor for synovial disease only, unless the health is failing rapidly. It should never be performed for acute suppurative disease. Two cases of excision are narrated, and woodcuts are given. In a boy of five, after two years, the limb was one inch shorter. The boy could walk and run without a stick. Eight years after the operation he was seen again; the limb was two inches shorter and much wasted, but he could get about well.

The second case, that of a girl aged seven, recovered well, and when the last note was made she could stand and walk on the limb well. Diseases of the knee-joint are discussed November 6, 20, December 4.

Disease of the knee; operative interference. — In the 'Lancet,' January 8, 1870, is an abstract of a paper read by Mr. Bryant before the Medical Society of London, on the subject of the treatment of disease of the knee-joint, more especially with reference to operative interference. He began by stating that, as a rule, no operative interference was necessary in inflammatory disease of the knee-joint without disorganization. When suppuration has taken place and disease of synovial tissue, a cure by natural processes, assisted by art, is generally to be secured. When the disease begins in the bone, operative measures are demanded. A cure by anchylosis is by no means uncommon in the former case. During the acute stage danger to life is great, and the question arises whether or not to amputate to save life. As a rule, amputation or excision for acute suppurative disease is generally fatal. Mr. Bryant prefers making free incisions into the joint, and washing out with warm water. He thought this ought to precede other operations. Notes of two cases in which sequestra had been removed from the articular extremity of one of the bones forming the knee, with recovery with anchylosed joints, and one in which amputation had to be performed, are noted. In disorganization of the joint the choice lies between amputation and excision. Mr. Bryant has tabulated 188 amputations of the thigh for chronic disease of the knee-joint; Dr. McCormack 137, making a total of 325; of these, 66 died, and 259 recovered. The mortality being 20 per cent., or 1 in 5. In Dr. Hodge's work are noted 178 cases of excision of the knee for chronic disease; 70 died, and 108 recovered. The mortality being 39 per cent., or 1 in 2½. Mr. Swain states that up to 1865 excision had been performed in 316 cases; 85 died, or 27·2 per cent.; 9 of these having died after amputation, which was necessary in 39 cases. Since 1865, 74 cases are given, 25 of which died, or 33·7 per cent.; 4 also died after amputation, which was necessary in 11 cases; making a total of 29 out of 74, or 39 per cent. Mr. Swain also gives a select list of 82; 15 died, 4 of the others recovered after amputation. We thus have 472 excisions, with 129 deaths, a mortality of 27·3 per cent., 13 of these being after amputation. If, however, the results of both operations are considered, at different periods of life (a point of immense importance), the following striking results come out. In the amputations in patients under 20 years of age, of 69, 3 only died, being 4.3 per cent., or 1 in 23. In excisions, out of 97, 27 died, or 27·8 per cent., (1 in 3⅝.) In amputations between the ages of 21 and 40, out of 119, only 38 died, or 32 per cent., or 1 in 3. In excisions, out of 74, 39 died, or 52·7 per cent. (more than 1 in 2). The difference being 20 per cent. against excision. Admitting excision to be a good operation, do the advantages justify the extra risk? Mr. Bryant thought not. He also considered an early operation the most successful. It should not be performed when an operation is demanded to save life, only when local disease is steadily progressing in spite of treatment. Mr. Bryant, in conclusion, hoped

the advocates of excision would recognise the results of experience, and not shut their eyes to those cases that tell against the operation, the point to be settled being the period of the disease in which excision should be undertaken. As an operation of expediency, the author was inclined to think that excision may be, not only justifiable, but successful.

Degeneration of the cartilage of the patella.—In the 'Path. Trans.' (xx, p. 260) the results of some observations by Mr. Bruce, on the degeneration of the cartilage of the patella, without other articular disease, are given. Prof. Redfern figures and describes four similar conditions, but Mr. Bruce has found it present almost universally in the knee-joints of middle-aged people. To the naked eye the change consists of a yellowish discoloration, with loss of smoothness and production of fibrillation (best seen by placing the patella in water, when the fibrous bands will float out). The microscopic changes are those (shortly) of fibrillation and vertical splitting of cartilage. The earliest trace of cloudiness has been distinctly marked before the age of twenty-five, and the fibrillation very complete at thirty-six. The most marked examples have, however, usually been obtained from persons over forty-five. Yet at sixty-five the cartilages have been found in the early stage of fibrillation. The changes are degenerative, not inflammatory; the patella is the favorite seat, then the tibia. The arm is rarely affected. The hand and foot were not examined.

Chronic bone and joint disease.—Mr. Howard writes on this subject in the 'St. George's Hosp. Rep.,' iv, p. 143. He thinks the greater number of cases of chronic bone and joint disease are quite unconnected with any of the other signs of scrofula (having neither the general appearance nor the pathological tendencies described by Jenner); so that it is not possible, with any correctness, to class them among scrofulous affections, while the rarity with which they are associated with any formation of tubercle equally removes them from the class of tubercular diseases. "Of 134 cases of chronic bone and joint disease of which I took notes in the Hospital for Sick Children, in only 9 was there any sign of tuberculosis, and only 17 displayed other signs of scrofula; in 24, some member of the family was said to have died or to be suffering from phthisis, but the child itself presented no sign of the disease; in 22, only, could any history of injury be elicited." "Of 85 consecutive cases admitted into the hospital for various tubercular affections, in only 1 was there any bone or joint disease." "Of 146 post-mortem records in which tubercle is noted, in only 8 was there any bone or joint disease found, viz. of spine, 1; of hip, 3; of spine and hip, 1; of knee, 2; of tibia, 1. Similar statistics are given from St. George's. If these cases were tubercular in their origin, should we not expect that in some cases of acute tuberculosis we should find some sign of tubercle in the bones? Such does not appear to be the case. If, on the other hand, they were usually connected with scrofula, should we find the operations upon these cases so successful? There are some cases, however, which are the result of scrofula, and it is in these cases

that caseous infiltrations and masses are found, which have often been called tubercle. That they are not of that nature seems to me evident; first, because it is so exceedingly rare to find them associated with tubercle in other organs; secondly, they are always preceded by chronic inflammation; thirdly, it is frequently possible, in the same bone, to trace the gradual change, through all its stages, of the ordinary products of chronic inflammation to a thoroughly caseous material; and, fourthly, these changes are precisely what take place in inflammatory products in other organs, independently of tubercle."

Treatment of suppurating joints by free incisions.—Mr. Bryant, in the 'Med. Times and Gazette,' May 15 and 29, 1869, narrates cases showing the advantages of free incisions into joints in which suppuration has occurred. In the number for June 12 Mr. Bryant discusses the pathology of diseases of the joints.

Severe wound of the knee-joint treated with counter-irritation.—Mr. Furneaux Jordan, in a communication to the Medical and Chirurgical Society, detailed the case of a young man who received an incised, gaping wound in front of the right knee-joint. Inflammatory symptoms showed themselves on the second day, and blistering over the femoral and anterior tibial arteries was immediately resorted to, and counter-irritation was kept up by the use of iodine.

Enlargement of the bursa over the great trochanter.—Mr. Teale brings forward two cases in which the symptoms of hip disease were simulated by disease of the bursa between the great trochanter and the flat tendon of the gluteus maximus which is inserted in the fascia lata. They were relieved by free incisions laying open the cavity. He adds a third case (probable), and remarks that the cases agree very closely in several points. 1. All date from a *blow on the trochanter major*, rapidly followed by swelling in the situation of the blow. 2. In all there was absence of disease of the hip-joint, although, in one, the simulation was so close that the point could not be decided until the muscles became relaxed under chloroform. 3. In the first two the family history and personal history up to the time of injury were good. 4. All three recovered rapidly after free opening of the diseased cavity; the first two most rapidly, in whom the gluteal bursa was relieved from pressure by the division of the strong gluteal tendon. The third case recovered the most slowly, in which the gluteal tendon was not divided, owing to its possible bearing on the disease being unsuspected at the time of the operation. The cases point to the gluteal tendon as the great factor in keeping up the disease of the bursa, and to its division (so as to take off all muscular tension) as a cardinal point to be aimed at in operating for its cure. Possibly, also, some of the cases of rapid recovery after the opening of supposed psoas abscess may have been instances of unrecognised disease of the trochanteric bursa. ('Lancet,' October 8, 1870.)

Dr. MacNab relates two cases of a similar affection. ('Lancet,' November 12, 1870.)

Loose cartilages in joints.—Mr. Paget writes on the subject of the production of loose cartilages in joints. He has arrived at an explanation, which, he says, is similar to one put forward by Mr. Teale some years ago, but of which he was not aware till lately. Mr. Paget has had a case of necrosis of the femur in a young girl without suppuration or external sign of disease, probably produced by her habit of breaking sticks across the thigh. A sequestrum was removed by operation. He thinks that an analogous process occurs as regards the cartilage of joints. He removed a loose cartilage from the knee-joint of a healthy young man of sixteen. "This body looked exactly like a piece of the articular cartilage of one of the condyles of the femur. It was irregularly oval in outline, about an inch long, half an inch wide, and a line in thickness. On one surface it was convex and smooth, on the other concave and rough, and on this surface was a small prominent piece of bone, as if, with the cartilage, a piece of the articular surface of the femur had separated. The borders of the loose body were smoothly rounded off. In agreement with this general likeness to a piece of articular cartilage from a condyle was the microscopic structure of this loose body. In sections through its thickness was found a nearly homogeneous basis-substance with cartilage-corpuscles, which, in arrangement and all their other characters were exactly like those of articular cartilage. At and near the concave surface they were elongated, with their longer diameters at right angles with the surface, and grouped in nearly parallel, vertical lines. Nearer to the convex surface they were round or oval, fewer, and irregularly placed; and just beneath the surface they were very numerous, thin, compressed, and flattened, parallel with the surface, which was dense and darkly defined, exactly like the synovial surface of an articular cartilage. Thus, no character was wanting to make it certain that this loose body was a piece of the cartilage together with a very small portion of the bone of one of the condyles of the femur. Such pieces cannot be chipped off. These loose bodies are sequestra, exfoliated after necrosis of injured portions of cartilage, exfoliated without acute inflammation, just as the piece of bone was (in the femur case), or as a tooth, after a blow, may be slowly detached from its alveolus and cast out. And, certainly, among all the tissues there is none in which it might be more expected than in articular cartilage that the separation of dead pieces should take place without acute inflammation, for, its substance being without blood-vessels and not easily permeable, products of its morbid changes cannot be easily diffused." The view above given is supported by the fact that such bodies are frequently consequent on injury in perfectly healthy young persons, the injury having occurred some weeks previously. And, more strongly, the same view is sustained by the fact that the femur, after death, has been found void of cartilage on a part corresponding in shape and size with a loose body removed by operation, and on all other parts covered by healthy cartilage. Such cases will form a group sufficiently distinct from those in which the loose bodies are derived from abnormal growths of cartilage in diseased joints, whether from the changes in chronic rheumatic arthritis or from dendritic growths of synovial fringes or otherwise. ('St. Barth. Hosp. Rep.,' vi, p. 1.)

Treatment of aneurism by iodide of potassium.—Dr. Balfour advocates the use of this remedy, in the 'Edin. Med. Journ.,' July, 1869, p. 47.

Hypodermic injections of ergotin.—Langenbeck, in the 'Berliner klinische Wochenschrift,' March, 1869, advocates the subcutaneous injection of a watery extract of ergot in cases of aneurism. He was led to employ it in these cases from the consideration that its action on the uterus and on the arteries was identical, and consisted in inducing contraction of the inorganic muscular fibres, and he hoped to diminish the aneurism by causing contraction of the muscular fibres scattered over it. A middle-aged man had had an aneurism presenting above the left clavicle for some years, and had been almost cured at one time by the use of moxas. The pulsation, pain, &c., all returned, and it was determined to try ergot. On the 6th January the first hypodermic injection was made, consisting of about half a grain (0·03) of the watery extract of secale cornutum. This was introduced immediately beneath the skin covering the aneurism. The patient slept well, and was improved next day. After the second injection the aneurism seemed softer and smaller. From January 6th to February 17th the injections were made regularly, about every three days, in doses of from half a grain (0·03) to three grains (0·18). Decided improvement occurred, but pulsation did not quite cease. The preparation used was Bonjean's watery extract, diluted with three times as much rectified spirit and glycerine. Once, three grains were injected in one day and six the next day. The patient complained of flashing before his eyes and pain in the shoulder. He was not sick. In a second case, a carpenter, æt. 42, had a saccular aneurism of the radial artery about the size of a hazelnut. One single injection of two grains and a half of the watery extract caused it to disappear completely. The next morning the aneurism could not be felt, but in the course of the day a trace could be perceived. A slight erythematous redness appeared around the puncture, and the cellular tissue appeared slightly swollen and infiltrated. In a week this all went away, and the aneurism had quite disappeared. ('Edin. Med. Journ.,' November, 1869, p. 463.)

Subclavian aneurism.—Mr. Poland publishes the statistics of 119 cases of subclavian aneurism, collected from all available sources. In the first series they are arranged according to the mode of treatment adopted. In thirty-six cases no treatment has been put on record, and in three of them a spontaneous cure resulted. In twelve cases the patient was either bled or some internal remedy was given; seven of these were cured. In four cases, in which compression of the sac was used, recovery followed. In two cases, in which the sac was injected, death followed. Manipulation in four cases was followed by recovery in two of them. In eight cases an operation was attempted and not completed, and in one of these a cure (possibly from manipulation) followed. In fifty-one cases the ligature was resorted to. The third part of the subclavian was tied in twenty-one instances, and there were nine recoveries; the first part in ten, and all the patients died. The innominate was tied twelve times without success. In four cases

various arteries were tied; only one recovered. In another four cases Brasdor's operation was adopted, and death followed in all. Recovery followed in two cases in which amputation at the shoulder-joint was resorted to. The consideration of the bearing these statistics have on the question of treatment is deferred. ('Guy's Hosp. Rep.,' xv, pp. 47 to 156.)

Mr. Heath records a case of subclavian aneurism on the right side, involving the first, second, and third parts, in a man who had a cured aneurism of the left subclavian ('Clin. Soc. Trans.,' ii, p. 8). The specimen was afterwards shown at the Pathological Society (see 'Trans.,' xx, p. 123).

Mr. Poland narrates a case of fusiform aneurism of the subclavian artery treated by indirect compression (*i.e.* pressure on the cardiac side of the tumour). The thumb was placed on the artery leading to the tumour, and pressure made against the bony support behind. The circulation was completely stopped, and the same person could press for twenty minutes. It was kept up for ninety-six hours with a few minutes' intermission. The tumour then was smaller and harder, but still pulsated. He then left the hospital, but was seen several times afterwards, and was much improved. The pulsation began to diminish, and the tumour became solid. At the end of a month there was no pulsation whatever in it. The course of the artery was high above the clavicle, and was probably lifted up by a cervical rib. ('Med.-Chir. Trans.,' lii, pp. 276 to 302.)

This is followed by an account of a case under the care of Mr. Corner, in which an aneurism of the right subclavian artery was cured by direct compression. The patient was a man who had already undergone a spontaneous cure of a left popliteal aneurism, and in whom also a right popliteal aneurism had been successfully treated by compression on the proximate side. At p. 306 is an account of a case of subclavian aneurism in which Mr. Spence performed amputation at the shoulder-joint successfully.

Carotid aneurism.—A case of aneurism of the common carotid, successfully treated by intermittent digital compression of the arterial trunk, has been reported by M. Rouge, of Lausanne, to the Society of Surgery of Paris. The patient was a male, æt. 68. The compression was effected laterally, the thumb being placed against the anterior edge of the sterno-mastoid, the next three fingers under the posterior edge, and the artery being thus seized and compressed between them. Thus, the pressure on the pneumogastric, which occurs when the carotid is compressed from the front against the sixth vertebra, and which is so painful, if continued, as to be the main cause of failure, was avoided. Digital compression was continued for seventeen days, for an average of seven or eight hours each day. Cases already on record in which this treatment has been tried are—Gioppi, 1858 ('Annales d'Oculistique,' 1858, 5th part), Vauzeth, 1858 ('Archives Générales,' 1858), both successful; Delore, 1860 ('Gazette des Hôpitaux'), Ernest Hart, 1861 ('Lancet'), Sheppard, 1863 ('Gazette Hebdomadaire,' Feb. 19th, 1864), successful; quoted in 'Brit. Med. Journ.,' Feb. 27th, 1869.

Aneurism of the transversalis colli artery.—Mr. Pick describes a specimen. The patient, a soldier æt. 45, was under care when phthisis set in rapidly and caused death. The tumour had not increased nor apparently diminished while under treatment by compression. ('Path. Soc. Trans.,' xx, p. 145.)

Aneurism of arch of aorta; tracheotomy.—A case of aneurism of arch of aorta, without the usual symptoms, and in which tracheotomy was performed, is noted in 'St. Thom. Hosp. Rep.,' p. 331, 1870.

Aneurism of external iliac.—Mr. J. Hilton has communicated a paper to the 'Med.-Chir. Trans.,' lii, p. 308, on a case of aneurism affecting the right external iliac and femoral arteries, and the right popliteal. A tourniquet was applied over the right common femoral, the patient being under the influence of chloroform. After six hours the tumours remained nearly as before. In twelve days a second trial was made for six hours; pulsation in the upper aneurism not having ceased, the tourniquet was again applied for four hours. The patient required no further treatment.

Femoral aneurism.—A case of femoral aneurism under Mr. Birkett's care, treated by compression of the common iliac, and which ended fatally; will be found in 'Med.-Chir. Trans.,' lii, p. 317.

A case of aneurism of the superficial femoral (middle third), in which a rapid cure followed compression, partly digital and partly by tourniquet, is noted in the 'Med. Times and Gazette,' Aug. 21, 1869. The case was under the care of Dr. Eyton O. Williams.

Rapid compression.—Mr. Russell relates a case of aneurism of the left groin treated by digital compression for twenty-four hours over the external iliac. The tumour became slightly harder, but the pulsation remained the same. An ordinary tourniquet was applied to the common iliac under chloroform. After nearly nine hours the pulsation became almost imperceptible, and then stopped. During the latter part of this time, however, digital compression was used as well. Pulsation recurred at times. After a fortnight Lester's abdominal tourniquet was applied to the common iliac for five hours under chloroform. This was sufficient. The treatment extended over five or six weeks. ('Brit. Med. Jour.,' Oct. 22, 1870, p. 436.)

Compression, aneurism of profunda.—A case of aneurism of the profunda artery under the care of Mr. Erichsen has been cured by compression. ('Med. Times and Gazette,' April 23, 1870.)

Ligature of external iliac.—Successful cases of ligature of the external iliac are recorded by Mr. West ('Brit. Med. Journ.,' Nov. 13, 1869); Dr. Land (Nov. 27, 1869); Mr. Erichsen ('Med. Times and Gazette,' April 23, 1870); Mr. Smith, May 28, 1869; Dr. Fayrer, Jan. 1, 1870; and by Assistant-Surgeon McFarlane.

Compression in popliteal aneurism.—A case of popliteal aneurism cured by eight hours' compression with a weight of about eleven

pounds on the femoral artery is noted in the 'Lancet,' Dec. 18, 1869, by Mr. W. D. Longfield. Various other means had been tried. A figure of the apparatus used is given.

In a case of popliteal aneurism, in which pressure on the femoral had led to gangrene of the parts pressed on, M. Verneuil tried flexion of the knee, and the pressure of the weight of the limb only on a conical pad. A cure resulted. M. Verneuil suspected that the liability to gangrene might be associated with diabetes. He therefore examined the urine. Sugar in considerable quantity was found. The man improved under treatment.

Digital compression.—Mr. Maunder records a case of popliteal aneurism in which digital compression, kept up for twenty-two hours and thirty-five minutes, resulted in a cure, after other measures had failed. For a fortnight, flexion of the knee had been tried, then for three months compression of the femoral by a weight or tourniquet was carefully carried out without any favorable result. ('Med. Times and Gazette,' April 10, 1869.) Some remarks by Mr. Maunder on the theory and the method of cure of aneurism will be found in the same journal for March 13.

Mr. Bryant narrates a case in which an aneurism of one popliteal artery was cured by digital compression for twenty-four hours by students, and subsequently one on the opposite side, by digital compression, by the patient himself for four hours and a half. ('Guy's Hosp. Rep.,' xiv, p. 241.)

A case in which a cure resulted after the employment of *flexion, pressure by means of weight, bleeding and digital compression*, is narrated by Mr. Bloomfield. ('Brit. Med. Journ.,' April 2, 1870.)

Popliteal aneurism.—Cases of popliteal aneurism, one cured by flexion, another cured by acupressure of the femoral artery, another followed by death from mortification after acupressure, are narrated and tabulated. ('Boston City Hosp. Rep.,' 1870, p. 477.)

A man, æt. 36, had an aneurism in the left popliteal space, and was admitted into Guy's Hospital under Mr. Birkett. A tourniquet was applied to the femoral for ten days with the effect of consolidating the tumour. In seven months he had an aneurism in the right popliteal space. Two tourniquets were used, one on the upper part and one on the lower part of the femoral. The aneurism was cured in seven hours. ('Lancet,' Feb. 13, 1869.)

M. Legouest records a case in which six different plans of compression were tried in the course of a fortnight. Finally, for five days forced intermittent flexion of leg on thigh for an hour at a time every morning and evening effected a cure. ('Gazette des Hôpitaux,' No. 48, 1869.)

Flexion.—Dr. Buck records a case of successful treatment of aneurism of the groin by flexion of the thigh, after a relapse following a previous apparent cure by compression. ('Amer. Med. Journ.,' Jan. 1870, p. 69.)

A case treated by flexion for four weeks before admission, by pressure with Carte's apparatus for twenty-one hours without success, and then by digital compression for thirty-seven hours with cessation of pulsation, was under the care of Dr. Keith. ('Brit. Med. Journ.,' April 2, 1870.)

Dr. P. H. Watson records a case in which the *pressure of a weight* secured obliteration of the superficial femoral in twenty-four hours. The pulsation returned in the aneurism, however, owing to the large anastomotic branch of the profunda. Pressure on the common femoral for forty-eight hours ended in a permanent cure. ('Edin. Med. Journ.,' April, 1870.)

Rapid cure by manipulation, flexion, and digital compression.—Prof. Blackman, in the 'Western Journal of Medicine' (Jan., 1869), records the following. E. B—, an American, æt. 25, had noticed a popliteal aneurism ten weeks. Prof. Blackman remarked that he would try the obstruction of the artery on the distal side of the tumour, as advocated by Dr. Mapother, and manipulation of the tumour, recommended by Sir W. Fergusson, and digital compression in the groin. As it would be impossible to shut off the current of blood by pressure on the distal side, he would adopt Hart's flexion method. The knee was flexed (the tumour having been manipulated), and firm digital compression applied to the femoral below Poupart's ligament. At the end of thirty minutes only a slight thrill was felt. At the end of sixty-eight minutes the leg was strapped to the thigh, and the patient left. The next day the flexion was diminished. No further treatment was necessary. Was seen two months later, was still cured. ('Amer. Journ. of Med. Sciences,' July, 1869.)

Treatment by compression.—Dr. Patrick Heron Watson records two cases of successful treatment of aneurism by compression in the 'Edin. Med. Journ.,' May, 1869. The first was one of popliteal aneurism. Hart's flexion method was tried for a time without success, then pressure by means of weights for a month. Then a weight of 12 lb. was applied continuously for forty-two hours, at the end of which time pulsation in the sac ceased. Exertion on the part of the patient brought on a recurrence of pulsation, and pressure was again applied with success. In the second case the aneurism was just below Poupart's ligament. A 12 lb. weight was continuously applied for seventy-two hours with the effect of procuring cessation of pulsation. Consolidation of the sac had occurred at the end of twenty-four hours, and the pressure had been continued, as was shown later by pulsation in the superficial femoral.

Dr. Watson found a 12 lb. leaden weight, rounded at the end like the large end of an egg, the most convenient. He insists strongly on the necessity of watching that the weight is constantly applied night and day, so that the pulsation is completely stopped. Less pressure for a long time will ultimately produce the same result, but the former plan is, in most cases, to be preferred. Some valuable remarks are

made on the different views held as to the mode of cure in these cases and on various means of treatment.

Incision and ligature.—In the 'Retrospect' for 1867-8, p. 299, is a note of a case in which Mr. Gay laid open the sac and tied the artery above and below. In July, 1869, Mr. Gay had another case. He attempted the same operation. The patient had had his femoral tied for aneurism twelve months before, and pulsation now recurred. As the artery was obliterated, there was only the alternative of amputation if opening the sac, &c., was not successful. The sac was opened and the upper end of the artery secured. The lower end was deep and difficult to reach, and when reached was so diseased that a ligature would not hold. Amputation was therefore resorted to, and the patient recovered. ('Lancet,' March 27, 1869.)

Mr. H. Smith, in a case of popliteal aneurism, after having tried flexion and compression without avail, determined to incise the sac and tie the open end of the artery. The aneurism had rapidly increased in size. The ligature came away on the eleventh day, and the patient was doing well. ('Lancet,' Nov. 26, 1870.)

Traumatic varicose aneurism successfully treated by ligature.—Mr. Spence remarks that he can find no instance on record of any case of traumatic, varicose, femoral aneurism treated by ligature in a similar manner. The method of treatment generally recommended, and which has been hitherto almost wholly adopted in such aneurisms at the bend of the elbow, he considers inapplicable, or attended with the gravest risks, in the case of the femoral. The patient was a lad who had been stabbed in the thigh three weeks previous to the attendance of Mr. Spence. There was a pulsating swelling in the upper part of the thigh, and an undefined fulness produced by the dilated femoral vein. Pressure over the pelvis was tried with some good effect, but resulted in such irritation that an operation became necessary. About five weeks after the accident a ligature was placed on the superficial femoral above and below the swelling, without opening the sac, one ligature below Poupart's ligament, the other in Hunter's canal. The superficial incision was seven and a half inches in length. In a month the wound had healed save where the ligature was, and this was removed. When seen fourteen months afterwards, the cure was found complete. Mr. Spence remarks that distal ligature of the brachial for analogous conditions at the elbow has not been followed by success. Ligature of the artery above and below and gentle compression of the injured vein answers very well. It is very different with the femoral region. The risks of gangrene after operations on both vein and artery are so great that, in cases of long-standing traumatic aneurism in Hunter's canal, the distal operation in Scarpa's triangle has been practised to avoid injury to the vein. Prof. Syme has recorded cases showing the success of such treatment. Mr. Lizars has advocated tying the brachial artery above and below without opening the sac in cases of aneurism at the elbow, to avoid the risks of phlebitis. Experience has shown that this risk is very slight, and his plan has not been followed. When Mr.

Spence found that compression could not be continued, he had also determined that he could not trust to ligature of the femoral above only, on account of the communication with the large femoral vein through the interior of the sac. He determined, therefore, to apply a ligature above and below without interfering with the vein. ('Edinb. Med. Journ.,' July, 1869, p. 1.)

Two cases in which *suppuration of the sac followed ligature for aneurism* are narrated by Mr. Nankivell. In the one case ligature of the femoral, in the other ligature of the external iliac. In another case of ligature of the external iliac the patient recovered without any such accident. ('Med. Times and Gazette,' Nov. 13, 1869.)

Distal ligature in the cure of innominate aneurism.—Dr. H. B. Sands records ('Med. Rec.,' Feb. 1, 1869) the case of a woman, æt. 43, admitted into the Bellevue Hospital with an aneurism of the innominate. A soft, pulsating tumour existed at the root of the neck and behind the right sterno-clavicular joint, the bones composing which had evidently undergone partial absorption. The common carotid artery was tied above the omo-hyoid, and the subclavian in the third part of its course on the same occasion. No sensible change was observed either in the size or the pulsation of the tumour. On the nineteenth day the ligature on the subclavian came away, and that on the carotid on the twenty-third day. On the forty-second day hæmorrhage occurred from the carotid. The woman had become intoxicated and thrown herself about. The bleeding recurred on the forty-eighth day. Digital compression was kept up steadily for a fortnight. The tumour diminished in size after the operation, and visible pulsation ceased. Its contents also became somewhat firmer, although not very much so. Attempts were made, by the administration of internal remedies, to hasten consolidation. The disease has evidently remained, although the signs of improvement were unmistakable. The author sums up against the operation, except "the tumour were very small and the intermediate symptoms urgent." ('Amer. Journ. of Med. Scien.,' April, 1869.)

Mr. Christopher Heath writes on the treatment of intra-thoracic aneurism by the distal ligature, in connection with a case under his care. The patient died four years afterwards, and the specimen is now in the College Museum. ('Lancet,' July 2, and August 27, 1870.) The specimen from Mr. Heath's case is figured and described in the 'Path. Trans.,' xxi, p. 132.

Wounds and aneurisms of the gluteal and sciatic arteries.—In 'Langenbeck's Archiv für Klinische Chirurgie, xi, George Fischer collects and comments on all the published cases—35 in number—of wounds and aneurisms of the gluteal and sciatic arteries; and sums up with the following conclusions:—1. Wounds of the gluteal artery very seldom occur as the result of stabs, accidents during operation, or shots. Those produced by stabs are more liable to be followed by aneurism than to run a simple course. The diagnosis depends on the position of the wound and on the hæmorrhage, which is often dangerous. Ligature

of the wounded gluteal artery, although difficult, is the best means of arresting hæmorrhage; if this be impossible, ligature of the common iliac and hypogastric arteries is indicated. In wounds of the sciatic artery compression should be tried before ligature. 2. Aneurisms of the gluteal and sciatic arteries are not so rare as has been hitherto believed. Thirty-five cases are known, among which gluteal aneurism occurred in 3·5, as many cases as sciatic. Traumatic aneurisms, including the diffuse, circumscribed, and varicose, are more rare than the spontaneous; among the latter a case of anastomotic aneurism is noted. 3. Traumatic aneurism follows punctured and gunshot wounds and falls; the spontaneous form is often the result of contusions, and sometimes has attended pregnancy. In not a few cases the cause is unknown. 4. Traumatic aneurism of the gluteal and sciatic arteries has always occurred in males; the spontaneous in twice as many males as females, and more frequently on the left than on the right side. Most of the subjects of spontaneous aneurism were from 30 to 40 years old, and otherwise in good health. 5. Traumatic aneurisms appeared after violent hæmorrhage, either at once, in the course of a few days, or gradually; the formation of the spontaneous took place either within a short time or very slowly, and was attended with more or less pain. 6. Aneurisms of the gluteal artery are, as a rule, situated at the upper edge of the great sacro-sciatic notch, but sometimes spread over the greater part of the buttock. Aneurisms of the sciatic artery lie deeper, towards the tuberosity of the ischium, and, where the artery has an abnormal course, reach the upper part of the thigh. A portion of the aneurismal sac may remain within the pelvis. 7. The size in both forms varies from a slight enlargement to a swelling as large as a hen's egg, or sometimes even as large as a child's head. The tumours are soft and elastic; fluctuation may be felt in them, and they may become inflamed. 8. There is in almost all cases a strong pulsation, isochronous with the heart-beat, and moving the tumour rhythmically up and down. Whizzing, buzzing, and blowing murmurs are heard on auscultation. In both kinds of aneurism there is almost always pain in the tumour itself and in the course of the sciatic nerve; it may be followed by numbness and lameness. 9. The diagnosis of gluteal and sciatic aneurism is often difficult; it is founded on the combination of pulsation, aneurismal murmur, and pain in the sciatic region. The diseases between which and aneurism the diagnosis has to be made are abscesses, medullary tumours, cysts, and sciatic hernia. The diagnosis between gluteal and sciatic aneurism depends principally on the position of the swelling. 10. The aneurism, if left to itself, is liable to cause death by rupture and hæmorrhage. It very rarely remains stationary for a year. Spontaneous recovery is noted in one case only. 11. The means of treatment which have been adopted are compression, with or without Valsalva's method; laying open the sac and tying the gluteal artery; simple ligature of the gluteal, sciatic, internal, and common iliac arteries; galvanic puncture, and injection with chloride of iron. 12. Injection with chloride of iron recommends itself as the best method of treatment, on account of its simplicity, comparative safety, and shorter duration. Its results are permanent; it has been proved useful in varicose,

spontaneous, and anastomotic aneurisms of the gluteal and sciatic vessels.

Cirsoid aneurism.—In the 'Prager Vierteljahrschr. für Heilkunde,' 1869, iii, iv, C. Heine has collected the histories of sixty cases of cirsoid aneurism affecting the head, or, as he calls it after Virchow, *angioma arteriale racemosum*. Of the sixty cases, forty-three are described as instances of acute angioma, that is to say, where, after some premonitory symptoms, a swelling was formed by the dilatation of a defined arterial region. There were fifteen doubtful cases, in six of which the suspicion of a pulsating telangeiectasis, and in seven that of an arterio-venous aneurism, could not be excluded, and in two cases there appeared to have already been mere paralytic distension of the arteries. The case of a man, aged twenty-one, is related, who had a pulsating swelling of the size of a plum at the upper edge of the left helix; it extended over the squamous portion of the temporal bone, and appeared to be connected with the arteries of the opposite half of the forehead and cranium. There were also two smaller swellings on the upper convexity and posterior border of the antehelix. The temporal and posterior auricular arteries were much dilated; compression of these vessels only weakened the pulsation in the tumour. The disease had commenced as a simple, congenital nævus, which rapidly increased at puberty, especially on the cessation of an epistaxis which up to this time had occurred almost daily. Heine tied the temporal and auricular arteries, and, as this produced no effect on either the pulsation in the tumour or its size, he tied the external carotid, placing in addition a second (distal) ligature on this vessel and the superior thyroid artery together. The pulsation of the tumour thereon ceased; in removing it, however, it was necessary to apply thirteen other ligatures, and acupressure had to be applied to nine arteries of middle size. Considerable hæmorrhage occurred twice on the fifth day, and was arrested by ligature of the common carotid artery. Perfect recovery followed in two months. Heine founds some remarks on forty-five authentic cases of cirsoid aneurism. In thirty of these nævus was observed either at birth or in very early childhood; in the latter case it had, perhaps, been congenitally present in the muscles or glands, or in the bones, but had only at a later period become visible. The conditions under which a simple nævus may become developed into a cirsoid aneurism are mechanical injuries, puberty, pregnancy, general plethora, and transient hyperæmia. The operation of these conditions, especially in nævus affecting the head, is to be explained partly by the greater readiness with which the arteries of this part undergo dilatation, and partly by the nearness of the heart. In five cases the tumour was referred to a traumatic origin, and Heine is of opinion that these traumatic, cirsoid aneurisms had their source in the exuberant formation of new vessels in suppurating contused wounds, the newly formed vessels being exposed to influences favouring the growth of simple nævi. Heine does not follow Virchow in regarding the essential character of cirsoid aneurism as consisting in a true excess of growth, consequent on irritation of the walls of the vessels; he considers that the middle coat of the newly formed vessels

undergoes fatty degeneration and disappears, and that the walls of the arteries become thinned. Weakening of the resisting power of the middle coat would thus be the primary stage in the development of cirsoid aneurism, and the transference of the pressure of the blood to the external coat produces its wasting or atrophy. In regard to treatment, Heine places excision in the first place, especially in the more simple cases; a ligature should first be applied to the common carotid artery, or to the arteries of the head which lead to the tumour. He regards as groundless the objection that excision is dangerous from exposing too extensive a surface of the skull. Of eight cases operated on in this way, all recovered. On the other hand, according to statistics, ligature of the external carotid or of the common carotid, on one side, or even of both carotids, is not of itself sufficient. In thirty-two cases, out of sixty, the external carotid was tied, and in three only with successful result, and that doubtful; and the results of ligature of both carotids, in seven cases, were equally unfortunate. In cases where the disease extends over the greatest part of the face or cranium, Heine recommends, as experimental means, transfixion and the twisted suture, injection of the perchloride of iron, or electro-puncture.

Gunshot wound of the neck, with reflex paralysis.—Dr. Allen narrates the following case:—An officer was shot in the neck, and immediately became insensible, and remained so for some hours. It was then noticed that complete paralysis of both lower extremities existed, while intense burning pain was experienced in the left palm. The bullet had entered an inch above the left clavicle, a little to the outer side of the sterno-mastoid, and had lodged. During the first seven weeks gradual improvement in the paralysis occurred. The left arm was also paralysed, and had not improved. The recovery of sensation seemed to precede that of motion. By the fifth month the patient could walk with crutches. In the sixth he joined his regiment. The burning pain in the hand persisted. In the tenth month it is noted that the right side of the body had recovered excepting the foot, which could not be extended completely, and was sensitive to cold. The left had recovered save the power of extension, which was impaired. In the act of walking the limb was swung outwards and forwards by a peculiar motion. Sensation remained obtunded. In the left upper extremity the motion had been restored except in the extensors and flexors of the hand. The fingers were rigid and permanently semiflexed. The palmar pain had almost entirely disappeared, but general sensibility was impaired. The nutrition was very deficient. He left the army, and became a clerk. He could walk short distances, and could attend to his duties. At the end of rather more than twelve months symptoms of phthisis set in, and gradually developed. He died three years after the receipt of the injury.

A post-mortem examination showed a cicatrix on the side of the neck, depressed, but not puckered, about the size of a split-pea, and non-adherent. No trace of the ball was found till after careful dissection. An irregular particle of lead, about the size of a mustard-seed, was discovered imbedded in the connective tissue between the brachial plexus,

of the left side and the corresponding subclavian artery. There were numerous particles of lead disseminated through the spinous process and laminæ of the first dorsal vertebra. The ball was lodged deeply in the right side of the posterior cervical region, lying on the side of the spinous process of the second dorsal vertebra, near its tip. It was enclosed in a well-defined capsule, which was intimately associated with the spinous process, above, by means of a conspicuous exostosis. The fluid in the spinal canal was gelatiniform and of a pinkish hue. The cord was congested, but on careful examination by Dr. S. Weir Mitchell was unaffected.

The following are the author's conclusions:—That it is the only case on record in which the course of a wound inducing reflex paralysis has been traced by dissection. That conspicuous change had taken place in and about the membranes of the cord, although there was no proof that the ball had entered the canal. That the position of the ball on the right side of the spine, without apparent fracture of the intervening bones, as well as the presence of particles of lead in the first dorsal spine, are curious and unique. That it does not follow that upon extraction of a simple conoidal ball we have removed from the body all the lead which entered it. Two woodcuts are given. ('Amer. Journ. Med. Scien.,' April, 1870, p. 411.)

Remarkable course of a bullet in a case of wound of the abdomen.—The following case is recorded by Dr. Gihon, in the 'American Journal of Medical Sciences,' July, 1869:—A Chinaman, æt. 30, was shot in the abdomen with a revolver. The aperture of entrance was half an inch below and two inches to the right of the umbilicus. There was no orifice of exit. A gurgling of mingled air and fluid could be felt in the left inguinal region, leading to the supposition that a hernia had been wounded in this situation. Great swelling occurred, and incisions were made. At the end of a fortnight Dr. M. had cut off several inches of sloughing intestine which protruded from the bottom of the scrotum. The man died the next day, and, at the post-mortem examination, on laying open the supposed track of the ball, no trace of it could be found. It had passed transversely across and slightly upwards to the left hypochondrium, near the extremities of the floating ribs, where it was reflected down in a curved direction towards the left groin, crossing (deeply) an incision that had been made. After sawing out the anterior wall of the pelvis, with the bladder and genitals intact, it was found that the bullet had crossed behind the symphysis to the right side, and was there lodged behind and below the horizontal ramus, where it was completely concealed, and had imbedded itself without exciting the least irritation. A hernia of the left side had been wounded, as was supposed.

Recovery with a bullet lodged within the skull.—In the Museum of the Leeds School of Medicine is a specimen (No. 1,332), showing the front half of the cranium of a young woman, with a bullet lodged just below the inner angle of the right sphenoidal fissure. The bullet is firmly fixed in its place by a margin of bone, which, in some degree, imbeds it. It is close to the anterior clinoid process, which has been

pushed upwards so as almost to obliterate the optic foramen. This process is short and stumpy. The patient died of typhus fever. Nothing was known as to the injury. There was no scar noticed on the face, but the inner wall of the orbit appeared to have been struck by the ball on its way. The fact that the bullet was still under the dura mater might explain its stopping where it did. ('Brit. Med. Journ.,' Oct. 23, 1869.)

*Excision of the ankle for gunshot.**—Not one case was recorded in the Crimea. Langenbeck performed five operations with only one death during the German-Danish war of 1864; in the Bohemian war of 1866, eleven with two deaths. All the operations were "sub-periosteal," and, in the latter war, all were secondary. During the American war, of twenty-two recorded cases, eight were excisions of the tibio-tarsal articulation, and the remainder nearly all ablations of portions of the tarsal bones. Of eighteen terminated cases twelve recovered, and six died. ('Med. Times and Gazette,' Oct. 15, 1870.)

Excision of the knee for gunshot.—There is an able article on this subject in the 'Med. Times and Gazette,' Oct. 15, 1870. Only seven cases had been reported previous to the American war. Two of these were successful, one under the care of Mr. Crompton, of Birmingham, ('Med. Times and Gazette,' May, 1861), and one under the care of M. Verneuil ('Gazette Hebd.,' Nov. 1862.) A third occurred during the Crimean war, and would probably have succeeded had not diarrhœa, &c., set in. A fourth was under the care of Mr. Hutchinson in the London Hospital ('Lancet,' April 20, 1861). The patient died of tetanus set up by an injury to the opposite leg. (The other three are not noted.—Ed.) During the late American war eleven cases have been noted with nine deaths; one of the recoveries, however, is considered "doubtful." The fourteen deaths in eighteen recorded instances gives a mortality of 77·77 per cent., about 13 per cent. greater than that following amputation of the thigh in military practice.

Excisions of the shoulder-joint for gunshot.—A very able article on this subject will be found in the 'Med. Times and Gazette,' Sept. 24, 1870. During the American war the results of primary resection were more favorable than those of secondary operations. The per-centage of mortality in the primary cases being 23·3, and in the secondary 38·6, giving a mean of 32·5, being a per-centage of 6·7 in favour of excision, as compared with complete amputation; the latter per-centage was 39·2. Of twenty-nine soldiers invalided from New Zealand, six (or nearly one fifth of the whole) offered examples of resection of the shoulder-joint. The greatest length of bone removed in these cases was about four inches. In the American operations as much as five or even six inches were removed. In Circular No. 6, of the Surgeon-General of the American Army, is mentioned the very remarkable case of a private in whom, after excision of the head and upper third of the humerus,

* The time is hardly ripe for a retrospect of the surgery of the late Franco-German war; the reports, so far, are unfavorable to excisions for gunshot.—(Ed.)

the remainder of the bone became necrosed and was excised, together with the articular ends of the radius and ulna, and yet a limb was preserved which, with the aid of ingenious apparatus, was very useful. This also stated that, in twenty-nine of the American cases, portions of the clavicle or of the coracoid and acromion processes and neck of the scapula were excised, as well as the head of the humerus. Only four of these cases ended fatally, and the average result in the recovered cases was as satisfactory as the ordinary result in decapitation of the humerus. In the number of the 'Gazette' for Oct. 1 is another article on—

Resections of the elbow and wrist-joints.—The comparative difficulty of maintaining the elbow in an immovable state renders the treatment troublesome, and assists in explaining the fact that the mortality consequent on resection was, during the late American war, a fraction higher than that following amputation. It is said by Dr. Hodges that as much as four inches of bone, above, and four below the joint may have several times been removed, a useful arm being regained, but the chance of myelitis is increased when the medullary cavity is opened. Of all the principal excisions performed for disease, that of the wrist-joint is the one on which the least reliance is placed, and Dr. Hodges infers, therefore, that in military surgery the results would be unfavorable, and such is the case. He thinks, however, that there is perhaps sufficient precedent to authorise renewed trials in cases not accompanied by too great laceration of the soft parts. A few secondary operations have lately been performed at Netley with results similar to those met with in cases of disease by Surgeon-Major Mackinnon.

Excision of the hip for gunshot.—In the Circular No. 2, issued by the Surgeon-General of the United States Army, Washington, 1869, and compiled by G. A. Otis, will be found an account of a number of amputations at the hip additional to those in No. 7 (see 'Retrospect,' 1867-8, p. 326), as well as a comparison between the results of excision and amputation. The number of amputations performed during the American war has been increased from 53 to 62, and of recorded cases from 108 to 121. It is stated that of 39 cases of primary excision, 36 died (92·3 per cent.); of 34 intermediate, 30 died (88·2 per cent.); of 12 secondary, 11 died (91·6 per cent.); total, 85; 77 deaths, 8 recoveries, and a mortality of 90·6. On the other hand, of 183 cases in which amputation was performed, 162 died, 18 recovered, giving a per-centage of 90. (Three doubtful cases are excluded from the per-centages.) 79 were primary; of these, 75 died, 1 recovered, and 3 were "doubtful" (98·68 per cent.); 76 were intermediate, 70 died (92·10 per cent.); 20 were secondary, 13 died (65 per cent.); 8 were reamputations, one half died (50 per cent.). An able article on this subject will be found in the 'Med. Times and Gazette,' Oct. 8, 1870.

Excisions for gunshot.—In the 'Brit. Med. Journ.,' Jan. 15, 1870, is a review of a work entitled 'Das Endresultat der Resectionen im Kriege, 1864, in den Unterlassen der Danischen Armee.' Von Prof. Dr. Adolph

Hannover. It appears that during the war between Germany and Denmark, in 1864, as many as eighty resections of joints were performed by the Prussian surgeons. All, with one exception (a resection of the knee), were resections of the two large joints of the upper extremity. Thirty-two of the operations were in Germany, and forty-eight among wounded Danes. The latter came at last under the observation of Danish surgeons, as pensioners, having to obtain certificates once a year. One of the members of the Pension Committee is Prof. Hannover, and he gives an account of what he saw as to the results of the excisions. He shows that the sanguine reports of the Prussian surgeons (which are reprinted) were in no respect confirmed after five years of observation. He states that, in the majority of instances, the patients reported to be cured were left with useless, dangling limbs, and that the Danish surgeons, as well as the patients, both agree that amputation would have been preferable, for it would have saved the latter from being burdened with limbs which are not only cumbersome and powerless, but also sources of frequent pain. Atrophy of the extremity, coldness, numbness, contractions, are among the other unfavorable conditions brought to notice in these cases. The reviewer suggests that "some of the unfavorable conditions noticed in Prof. Hannover's cases naturally lead to the inquiry whether important nerves may not have been injured at the time when the wounds were received; for, if so, they cannot be accepted as having been fit cases for the operation of resection." "One successful instance is sufficient to annul a general condemnation of the operation itself." "A number of unsuccessful results after resection prove little as to the inefficiency of the operation itself, as the absence of success may be due to many causes, while one successful case proves, by obvious facts, the intrinsic value of the operation, as compared with total removal of the extremity by amputation." "It is the first time that the *final* results of so many instances of resection of the shoulder and elbow, occurring together, have been so critically and fully examined."

In the 'Med.-Chir. Rev.,' 1871, is a detailed abstract of Dr. Hannover's conclusions from a paper of his, in the 'Archiv für klin. Chir.,' xii, H. 2, 1870.

In a work by Dr. F. Loeffler ('Die Enthüllungen des Herrn Prof. Hannover über das Endresultat der Resectionen des Schulterund Ellenbogen-Gelenkes') it is shown that Dr. Hannover has relied on certificates from Danish surgeons, given to show that the patients were in need of relief. Other independent witnesses gave very different accounts. The same attention may not have been paid to the cases, it is hinted, in the after-treatment in Denmark as in Germany, where the patients are sent to watering-places, and electric currents and gymnastic exercises used. ('Brit. Med. Journ.,' May 28, 1870.)

Treatment of gunshot wounds with chloride of zinc.—Mr. De Morgan advocates the use of chloride of zinc. In recent wounds, where the skin is not much thinned, he uses a solution of from thirty to forty grains to the ounce of water. This is used freely, especially in the crevices of the wound and the cavities of bone, till the surface is creamy.

The wound may be put together in the ordinary way, and it should be covered with linen or lint wetted with a solution of five grains to the ounce. The covering should be kept constantly wet. The wound should be washed and dressed after twenty-four hours with the weak solution. Mr. Morgan has had rapid cures in crushed and lacerated wounds; perfect union by first intention in large operations, as high amputation of the thigh; and, very commonly, union with only slight suppuration in the course of the wound, and this where ligatures have been placed on vessels requiring them. Pyæmia, no doubt, will ensue in spite of all precautions, but is rendered much less frequent.

In the 'Brit. Med. Journ.,' Sept. 3, 1870, Mr. Lister gives simple directions for the application of antiseptic dressings to gunshot wounds, and explains the object of the different steps.

Gunshot wounds of the head.—There are interesting articles on this subject in 'Med. Times and Gaz.,' Nov. 19 and Dec. 10, 1870, and also by Prof. Longmore in the new edition of 'Holmes's System of Surgery,' vol. 2.

Treatment of the sick and wounded in war.—In the course of some remarks on the treatment of the sick and wounded in war, Mr. Berkeley Hill lays stress on the importance of *segregation* and the admission of a quantity of *pure air*. Often it has been noticed that the patients who were most exposed had a smaller mortality than those who were better housed, but crowded and without proper ventilation. He then gives a summary of the recent discussion respecting large hospitals, and passes on to describe the German Barack-Lazarethen. The most successful military hospitals of modern times have been constructed on the plan first devised in the Crimea by Mr. Brunel. Under the instruction of the sanitary officers the hut hospitals have proved that certainly hospital fever and hospital gangrene, and probably pyæmia (diseases which have destroyed so many of the wounded in former wars), can be entirely prevented in military hospitals. A short description of one at Saarbrück will suffice. In an open garden, clear of the town, the series of single-roomed huts which formed the hospital were arranged in a double row, each hut being separated from its neighbours by a space equal to its own height. Light and air could thus penetrate freely around. The ground was well drained, a distinct system of pipe-sewers carried away the excreta, &c., and the water supply was good. The huts, built of rough, weather boarding, were raised on stages two feet above the ground, so that air penetrated freely between the planks of the walls, the floor, and the roof. At the floor-level apertures for the admission of air were left, and the ridge of the roof was lifted above the rest, to afford an easy exit for the heated air of the interior. The windows were partly of glass, but chiefly of light shutters that could be raised or lowered at pleasure. Each hut contained about fifteen beds. The kitchen and medical offices, &c., were in separate huts. In the huts visited not one case of pyæmia had occurred. One of these hut hospitals is being prepared to receive 1300 patients in an open space near Berlin, under the superintendence of Prof. Virchow.

The Momer General Hospital of Philadelphia consists of fifty huts, accommodating 5000 patients. A tramroad runs round, and waggons bring the food, &c., to each hut-ward without delay. A telegraph connects the huts with the other parts of the administration. A branch from the railroad permitted the cars to come from near the battle-field to the door of the hospital. There is a printing establishment which prints a newspaper, the articles being written by the staff, &c., and given gratis to the patients, the cost being defrayed by the sum received for the slush from the hospital kitchen. ('Brit. Med. Journ.,' Oct. 8, 1870.)

Colotomy for vesico-intestinal fistula.—For previous notices see the 'Retrospects' for 1866-67 and for 1867-68. Mr. Bryant communicates the following case to the 'Med.-Chir. Review,' Jan. 1869. W. D—, a cellarman, aged forty-nine, had, for two years, noticed the occasional passage of slime and blood with his motions. Some eight months previously he had passed flatus and a small quantity of blood and fæces with his urine. The latter was found, on examination, to be loaded with feculent matter, and, at times, solid fæces passed per urethram. The whole calibre of the lower bowel, as far as the finger could reach, was superficially ulcerated, but this ulceration was not associated with much adventitious deposit, nor with any such as usually exists in cancer; the bowel appeared to be fixed in its position, and glued to the parts around by inflammatory lymph; a stricture of the bowel was clearly felt high up, through which the tip of the finger could just be passed. "The nature of the case was thus tolerably clear. It was one of ulceration and stricture of the lower bowel, with a fistulous communication between the bowel and the bladder. It was fair to believe that this communication was indirect, from the fact that no urine made its way into the bowel, and it appeared probable that the large intestine was the part involved, from the solid nature of the fæces passed per urethram. Under these circumstances colotomy was performed as the only means of affording relief. Afterwards an abscess formed at the base of the bladder, presenting in the perinæum, and was opened. Later a sudden passage of liquid fæces and of flatus through the urethra occurred about two months after the operation; then the patient's health gradually failed, liquid fæces passed regularly through the urethra, evidently from the small intestine, and the man died four months after the operation. At the post-mortem the lungs were found studded with miliary tubercles, and the left kidney contained a large abscess. There was no evidence of recent or general peritonitis. The rectum descended normally from the sigmoid flexure, but in the pelvis became adherent to the bladder, and opened into a large abscess. The calibre of the rectum continued open, however, to the anus. All signs of ulceration had disappeared, and, with the exception of the large opening into the cavity at the base of the bladder, no signs of disease of the rectum remained. The abscess at the base of the bladder communicated also with the small intestine and the bladder. Between the rectum and the bladder was a large abscess, with dense adhesions all round it. Into this opened, first, the ileum where adherent to the bladder; next, the rectum

by a large orifice; and, thirdly, the bladder itself by a smaller one just sufficient to admit the finger." Mr. Bryant remarks, "There is very little room for doubt that the case was one, from the beginning, of simple ulceration of the lower bowel, for, at the end, no signs of ulcerative disease existed beyond that furnished by the fistulous, vesical communication. That this ulceration of the bowel made its way into the bladder was clearly proved by the passage of flatus and fæces with the urine, per urethram, one year and a half after the first appearance of the disease, and, that the communication was indirect or valvular was indicated by the fact that no urine was ever observed to have made its way into the rectum. The benefit afforded to the patient by the operation of colotomy was immediate and striking, although its duration was, for a time, interfered with by the formation of the fæcal abscess at the base of the bladder, and the relief which was given by a free incision through the perinæum was rapid and effectual. The secondary communication of the small intestine with the bladder by ulceration, two months after the operation, was a point of special interest, but marring the full effect of the operation. Lastly, had not suppuration of the kidney existed, there is good reason for believing that life might have been indefinitely prolonged." This case tends to support the conclusions of Mr. Holmes reported in the 'Med.-Chir. Trans.' (see last two vols. of 'Retrospect'). Mr. Bryant suggests that the ulceration in these cases has resemblance to that met with in the simple perforating ulcers of the duodenum, &c. When the communication is with the large intestine, hard, fæcal matter passes by the fistulous tract, and causes much greater agony than when the motions are fluid. In order effectually to close the fistulous, vesical communication in his case, Mr. Bryant proposed to the patient, after the escape of liquid fæces from the small intestine, to lay the bladder and rectum into one, trusting that contraction would ensue, as after the recto-vesical operation for stone. Mr. Bryant advocates an oblique incision, as affording more room, following the direction of the nerves and of the fold of the integument, thereby favouring repair. In three other cases it was found very advantageous.

Colotomy.—Mr. Allingham describes and tabulates 11 cases; one patient lived for four years and a half; one four years, and is still alive and well (case of stricture and ulceration of the rectum). A third case has lived three years and is still well (probably syphilitic ulceration). The longest period after operation for cancer of rectum, &c., was nineteen months. ('St. Thomas's Hospital Reports' 1870, p. 285.)

Mr Curling describes a case of cancerous stricture of the rectum in which he performed lumbar colotomy. The patient was a man aged 48, and had suffered more or less for four years from symptoms of stricture, and obstruction had existed for twelve days. There was no special difficulty experienced in the operation, and great relief followed. For twelve months the man led "a very tolerable life," but he then began to get weaker, and sank at the end of seventeen months. Mr. Curling remarks, with reference to the question of performing colotomy for the relief of pain without obstruction being present, that though Amussat

was the first to suggest this operation in cases of obstruction, he did not seem to have called attention to it as a means of relieving pain and irritation simply. "I know of no published case in which colotomy has been performed in Paris except to relieve obstruction." ('Med. Times and Gaz.,' Jan. 1, p. 1870.)

Mr. Couper showed a specimen of stricture of the rectum, from ovarian abscess, taken from a patient on whom he had performed colotomy. ('Path. Trans.,' xxi, p. 190.)

Mr. Callender read notes of the case of a man, æt. 34, on whom he performed colotomy for the relief of cancer of the rectum. ('Clin. Soc. Trans.,' iii, p. 36.)

Gastrotomy.—Mr. Durham records a case of epithelioma of the œsophagus in which he performed gastrotomy, but without success. Reference is made to seven other cases.* ('Guy's Hosp. Rep.,' xiv, p. 195.)

A case is also recorded by Dr. Maury. ('Am. Journ. Med. Scien.,' April, 1870, p. 365.)

Malformation of the œsophagus.—A very rare case of malformation of the œsophagus in an infant is related by Mr. Annandale, in the 'Edin. Med. Journal,' Jan. 1869, p. 598. The gullet terminated in a cul-de-sac above the bifurcation of the trachea. It again became pervious at the stomach and for some distance above it. The lower portion of the œsophagus opened, below the cul-de-sac, into the trachea. References are given to other cases more or less similar.

Imperforate anus.—Mr. Christopher Heath narrated to the Clinical Society ('Trans.,' iii, p. 113) four cases of imperforate anus. The first and fourth (both males) were examples of an anal cul-de-sac, with termination of the rectum about an inch from the surface. In both the bowel was reached, in the first being drawn down and stitched to the margin, but both children sank, and in the last case the peritoneum was found to have been opened. In the second case there was a mere anal dimple. The bowel was reached after cutting through some very dense structure, but Mr. Heath was unable to draw it down to the skin. The child has thriven, and is now two years old. A bougie is passed occasionally, and there is no great tendency to contraction. The third case was in a female, thirteen months old. There was no anus, but a small opening into the vagina, through which fæces escaped with difficulty and in small quantity. An attempt had been made to establish an anus in the proper situation soon after birth, but without any good result. The attempt was repeated, but failed in giving relief to the distension of the abdomen, and therefore the perinæum was divided and a free opening made into the rectum from the vagina. The child

* Another case, not quoted, will be found in the 'London Hosp. Reports,' 1866, p. 218, in which Mr. Curling made an opening into the stomach for carcinomatous stricture of the œsophagus. A table of nine cases will be found in the 2nd edition of vol. ii of 'Holmes's System' (Mr. Durham's article). Mr. Hutchinson has, quite recently opened the abdomen, in the middle line, successfully, in the case of a child suffering from intussusception.—(Ed.)

recovered its health and did well for two years, when it died somewhat suddenly with symptoms of enteritis. Mr. Paget (during the discussion) said that the failures were more numerous than the successes. He had under his care a patient on whom he had operated fourteen years before. There was an opening by the vagina at birth. He had made an artificial opening where the opening should have been, and had kept it patent ever since. There was no passage through the vagina unless when the fæces were fluid. He asked whether a patient with imperforate anus had ever lived to the age of thirty. He mentioned the case of a young woman who, for seventeen years, had an opening between the vagina and rectum, but the collection in the gut became enormous. The rectum in these cases forms a large pouch, communicating by a very small opening with the colon, and it was so in this case. He dilated the opening and scooped out masses of very hard fæces and crystallized triple phosphate. It finally emptied itself, and now the patient passes the fæces through the vaginal opening. He had treated from ten to fifteen cases, and these were the only two which had proved so far successful. ('Brit. Med. Journ.,' April 23, 1870.)

Congenital absence of the rectum.—Mr. Couper showed a specimen from a child on whom he had operated for imperforate anus. The upper dilated portion of the vagina (the child being a female) formed a pouch, which was considered to be the end of the rectum during the operation. The child died unrelieved, and the rectum was then found to terminate, as a fibrous cord, adherent to the promontory of the sacrum. ('Path. Trans.,' xxi, p. 193.)

Polypus of the rectum.—Dr. Miller narrates the case of a woman from whose rectum he removed a fibrous polypus. He remarks that most surgical writers consider the affection to be a rare one. Mr. Henry Smith describes five forms, but omits the fibrous, and a new classification is proposed, omitting Mr. Smith's first—"processes of the mucous membrane standing out prominent in the cavity of the rectum." This the author does not consider a form of polypus. His division is:—1. The mucous or glandular. 2. Fibrous. 3. Malignant forms. Thirty-nine cases are collected from various sources, and the following deductions stated:—1. Polypus of the rectum is a rare disease. 2. The glandular is the form most frequently met with, the malignant next, and the fibrous most rarely (24, 8, and 6 in 39). 3. The glandular occurs most frequently in children, and the fibrous and malignant in adults (16 and 6 in the former, 13 and 1 in the latter). 4. On the whole, polypus is met with as frequently in adults as in children, eighteen of each having been recorded. The ligature is the safest and the proper instrument to employ. The polypus may be cut off directly, but the vascularity is such as to require the previous precaution of a ligature. In the one under care, though apparently non-vascular, on examination a large vessel was found in the pedicle. Altogether, seven forms have been described, but they can all be brought under the three heads given above. ('Edin. Med. Journ.,' January, 1870.)

Puncture of bowel to relieve distension.—A case in which puncture

of the bowel was resorted to for the relief of extreme distension after rupture of the bowel is narrated, p. 64, 'Clin. Soc. Trans.,' ii, by Mr. T. Smith. The patient was a boy, æt. 13. On the seventh day after the injury, Mr. Smith punctured the intestines, with a fine trocar, through the linea alba, midway between the umbilicus and pubes. The effect was immediate, and the relief to the boy's sufferings very great. He sank, however, twenty-eight hours later. The case is interesting from its unusual features. The boy was struck by a cricket ball in the right iliac fossa. He felt faint, but on lying down the sensation passed away, and although unable to continue playing he did not leave the ground. He remained an hour and a half watching the game, till its conclusion. He then walked home, a distance of more than a mile, experiencing but little inconvenience from the blow. Mr. Smith thinks that this absence of urgent symptoms might be due to an empty state of the bowel at the time, or that it was only distended with flatus. It seems unlikely that grave symptoms would have been so long delayed if any fæcal extravasation had taken place at the time of rupture. At the post-mortem examination it was found that fæcal matter in some quantity had escaped into the peritoneal cavity from a ragged opening in a coil of the lower end of the small intestine lying contiguous to the caput coli, the opening being large enough to admit the end of the thumb. Mr. Smith alludes to the cases in which the bowel has been punctured for the relief of distension. There are many cases in which tympanitis is not only a source of severe suffering to the patient, but a cause of real danger to life, and in which O'Brien's tube is useless. "In cases like these, intestinal puncture affords a safe and efficient means of relieving suffering, of facilitating respiration, and, it may be, of saving the patient's life." ('Clin. Soc. Trans.,' ii, p. 64.)

Herniotomy without returning the intestine.—M. Girard, finding that the statistics which he had collected indicated a mortality of 52 per cent. of those subjected to the ordinary operation for strangulated hernia, sets himself to inquire at what stage of the operation the source of danger is to be found. He considers, that up to, and including the liberation of the strangulated portion, the operation is nearly free from danger to life, whether this may arise from hæmorrhage, tearing the bowel, or peritonitis, but that nearly the whole of the danger of the operation lies in the reduction of the bowel by its return to the abdominal cavity. This inference is based upon a careful consideration of the circumstances which resulted in the death of twelve out of fifteen patients, operated on in the Hôpital St. André of Bordeaux, and of the general, recorded experience of the profession. M. Girard relates twenty-seven cases in which, for various reasons, the reduction of the intestine was not effected; of these, only seven died, the remaining twenty having been cured. Then follow some conclusions; the first five need not be re-stated, the sixth is that the fourth step of the operation has for its object the return of the intestine. This fourth step is a frequent cause of the persistence of the symptoms of strangulation; it is the most active cause of the peritonitis so commonly met with after operation. It provokes and produces the extravasation of intestinal

matters into the abdominal cavity. It is a proceeding not only irrational, but, also, opposed to the laws of prophylaxis against complication. 7. The reduction of the intestine after division of the stricture is the sole cause of numerous fatalities. 8. It is not a proceeding of primary necessity. 9. The leaving of the intestinal coil in the wound does not bring after it any disastrous consequences. 10. The intestine should always be left, and the fourth stage of the operation should not be proceeded with. 11. This is not often done. 12. The non-reduction hastens the subsidence of strangulation symptoms. 13. It is a prophylactic against peritonitis. 14. It prevents extravasation. 15. It does not induce fatal gangrene of the gut left behind. 16. This is a new mode of operating, it is kelotomy without reduction. 17. Unlike the ordinary operation, it is one applicable to all cases, and has one single object and fixed rule. ('De la Kélotomie sans réduction, nouvelle Méthode opératoire de la Hernie Étranglée,' Paris.)

On the danger of returning damaged intestine, see the 'Retrospect' for 1865-6, where will be found an abstract of Mr. Hutchinson's paper on the "Causes of Death after Hernia Operations" in the 'London Hospital Reports.'

Dr. Heron Watson, in the 'Edin. Med. Journal,' July, 1869, p. 12, narrates a case of strangulated, femoral hernia, in which perforation of the intestine occurred. The gut had been strangulated seventy-two hours. He proceeded to operate, and on opening the sac and dividing the stricture found the intestine had given way. He at once picked up the portion of gut around the opening with a pair of forceps, and then tied a ligature round this. He brought the ends of the ligature out at the wound, and stitched the edges of the sac to the edges of the wound, to keep it thoroughly open. The ligature came away on the twentieth day, and in another month the patient was quite well. Some interesting remarks are made on points in connection with the subject of strangulated hernia.

Gangrene of the abdominal wall after femoral herniotomy. The case of a man, æt. 42, is recorded, in which gangrene of the abdominal wall set in, and caused the death of the patient, after an operation for femoral hernia. No cause could be assigned. ('Gaz. des Hôp.,' No. 79, 1869.)

Fatty hernia.—Mr. Annandale writes on this subject. Prof. Turner met with several instances in the dissecting-room, and his notes are given of four cases. The author adds four more, two met with on dissection and two in practice. Such cases group themselves under two heads:—1. Fatty tumours, more or less circumscribed, having no connection with the peritoneum or subperitoneal fat; and 2, an increased development of the subperitoneal fat. The first of these, by no means common, is met with usually in the inguinal, scrotal, or labial regions. They simulate herniæ, but are never attended by serious symptoms. The second occurs most frequently as a growth or development of fat in connection with a hernial sac, more or less adherent to it, and forming a covering to it, but not a complete one. More rarely, the fat forms a complete covering round the sac, the neck of which may or may not

be pervious. In the first case, that of a female, Prof. Turner notes there was a covering of the femoral sheath, which had a thin, transparent, shining appearance, which might at first sight be mistaken for the sac of a hernia. A funnel-shaped, peritoneal sac was found in the middle of the fatty mass, which was a hypertrophy of the subperitoneal fat. In this same body was a fatty mass, protruding through the right external ring; it was covered by a fibrous investment, and its size that of an almond. It was in the position of a direct hernia. The second was also that of a woman. A fatty mass in the left crural region contained a sac with omentum in the centre. A smaller one on the right side showed an empty sac. The third was similar, on one side only; so also in the fourth case. The fifth was in a male; a direct fatty hernia existed on both sides. In the sixth, a male, a large right scrotal hernia existed, and also a fatty, direct, on the same side, containing a sac, not communicating with the peritoneum, but it had done so probably at one time. "The kind of hernia under consideration consists, then, of a mass of fat, more or less lobulated, continuous with the subperitoneal fat, and forming a complete, closely investing capsule around a true, peritoneal sac, which may or may not be shut off from the general peritoneal cavity." Masses of subperitoneal fat occasionally protrude without having any peritoneum in their interior. Fatty herniæ may exist singly, or there may be several, and they may coexist with ordinary varieties. They may be reducible, but are most frequently irreducible, especially when they have existed for some time. They may become strangulated, and give rise to usual symptoms, if the sac in the interior remains sufficiently open, and communicates with the peritoneal cavity, so as to allow of the passage of abdominal contents. The development of fat, in some of these cases, would appear to take place in connection with a true hernial sac, which has become shut off from the general peritoneal cavity, or which is undergoing a spontaneous contraction. In other cases Mr. Quain considered the protrusion of the fatty mass to be the first condition, a process or tube of peritoneum being gradually drawn down into it. There are, however, three pathological facts important to the practical surgeon—(1) that the fatty mass may contain a sac in its interior, which communicates with the general peritoneal cavity, and permits portions of gut or omentum, or both, to pass down into it; (2) the fatty mass may be invested by a covering, such as the femoral sheath, noted by Turner, in Case 1, and the author, in 7 and 8, or some fascia which simulates a true hernial sac, and might mislead the surgeon in operations; (3) several may exist in the same patient, and showing varieties. They may give rise to no symptoms at all, or to the ordinary symptoms of strangulation. Prof. Werner considers that in some cases the fat may act as a plug advantageously. The author then relates two cases he met with in practice. In the first, he cut down on what he considered to be a sac, exposed omentum, and proceeded to cut it off, having first ligatured it, and then found it to be fat, enclosing the real sac, a portion of which he had sliced off. In the second case the author exposed omentum, apparently, and then found a sac and intestine strangulated. ('Edin. Med. Journ.,' March, 1870.)

Oblique and direct hernia on the same side of the body.—In the 'Edin. Med. Journal,' March, 1869, p. 784, Dr. John Chiene gives a detailed description of the appearances shown on the dissection of a man, æt. 64, in the dissecting-rooms of the Edinburgh University. When the abdomen was opened two circular openings were found in the right inguinal region. They were of equal size. A well-marked ridge, formed by the epigastric artery, separated them; another ridge, formed by the hypogastric artery, bounded the inner opening internally. The external corresponded to the internal ring; the internal to the lower and outer part of Hesselbach's triangle, where it is uncovered by conjoined tendon. A complete septum separated the sacs; neither communicated with the tunica vaginalis. There appeared to be a tendency to a similar state of things on the left side of the body. A careful dissection of the parts was made. The only covering common to both sacs was the spermatic fascia. The septum consisted of six layers. The only covering of necessity double was the peritoneum. The coverings from the transversalis fascia and the internal oblique would probably each have formed one bag, for both herniæ, if the latter had occurred suddenly. References to the bibliography of the subject are given. Two figures, one showing an external and the other an internal view, accompany the description.

Operation for the cure of artificial anus after hernia.—Dr. Buchanan narrates the case of a woman who had long suffered from a femoral hernia, and in whom an artificial anus formed after an operation, when it became strangulated. An enterotome, fashioned on Dupuytren's description, was used for five days, at the end of which time it had eaten away a portion of the septum, between the two openings of the bowel, at the artificial anus. A motion soon passed by the natural passage. The actual cautery was used repeatedly to make the other opening close. Finally, a plastic operation completed the cure. ('Edin. Med. Journal,' April, 1869, p. 866.)

Congenital diaphragmatic hernia.—An exhaustive paper on this subject, from the pen of Dr. T. A. G. Balfour, will be found in the 'Edin. Med. Journal,' April, 1869, p. 883.

An interesting case of diaphragmatic hernia, a sac containing the stomach being found in the right chest, in a man, æt. 54, under care for stricture of the œsophagus, is described by Mr. J. D. Hill. ('Path. Trans.,' xxi, p. 154.)

Mr. Holthouse relates a case of inguino-crural hernia, in a man, æt. 21. ('Clin. Soc. Trans.,' iii, p. 136.)

Dr. Bryan records a case of large, femoral hernia, in a man, in which there was also the peculiarity that the testis on the affected side passed almost indifferently either into the thigh, through the crural canal, or into the scrotum through the external ring. ('Brit. Med. Journ.,' Dec. 18, 1869.)

Foreign bodies in the œsophagus, &c.—The case of a gentleman who swallowed a brace-buckle with a piece of leather attached is recorded in

the 'Lancet,' May 15, 1869. The buckle became impacted in the œsophagus, but was pushed down, it was supposed, into the stomach after the lapse of a fortnight. Three months later the patient was in excellent health, but no further trace of the buckle was seen. Mr. Bond, who records the case, thinks the buckle must have been still in the stomach.

In the 'Lancet,' October 16, and 'British Medical Journal,' October 23, 1869, is a note of the case of a man who swallowed an artificial tooth, which lodged in his œsophagus. Mr. Dearden made ineffectual efforts to force the tooth down, and then succeeded in fishing it up by means of a probang, to which he had attached several loops of silver wire; one of these caught in the frame attached to the tooth, and after some trouble the latter was removed.

Mr. R. C. Todd records a case in which a small-sized teaspoon, of Britannia metal, remained impacted in the œsophagus for thirty-six hours. A lady swallowed it purposely. Mr. Todd felt it, and succeeded in getting hold of the bowl, which was uppermost, and extracted the spoon. ('Brit. Med. Journ.,' November 13, 1869.)

Lodgment of artificial teeth in the pharynx, &c.—Mr. Pollock narrates three cases ('Lancet,' April 3, 1869). A lady swallowed two central incisors attached to a small gold plate. They remained for nineteen days in the œsophagus, and then the plate was pushed, by Mr. Pollock, into the stomach. At the end of seventy-two days from the accident she vomited, and heard something ring against the basin. This proved to be the plate. A figure of the plate is given. The second case was that of a lady who swallowed six teeth set in a gold plate. They passed per rectum on the fourth day. There were no sharp or projecting points, though the plate was an inch and three quarters long. The first was smaller, but irregular. The longest diameter was three quarters of an inch. A figure of the second plate is also given. In a third case the patient, a young man, was brought to the hospital quite dead. He was running and fell, as was supposed, in a fit. The autopsy revealed a plate with three teeth, and having a sharp prominent hook at each end, to grasp some teeth in the upper jaw, lying loosely upon the epiglottis.

A case published by Mr. Paget is then quoted. An old gentleman missed a set of teeth. He was suspected to have swallowed them, and had some difficulty of swallowing and of breathing. Four months after the accident Mr. Paget saw him, and then, on depressing the back of the tongue extremely, he saw something white near the epiglottis. Passing his finger close to this, he succeeded in hooking out the lost false teeth (a whole set). It measured $2\frac{1}{4}$ in. from before backwards, and $1\frac{5}{8}$ in. across.

After noticing Mr. Cock's cases of œsophagotomy, the question of treatment, generally, is summed up. If the foreign body be lodged in the pharynx, try and hook it up. If this cannot be accomplished, and there be much inconvenience from its presence, œsophagotomy must be performed. If the body has reached the œsophagus, try and push it down gently, and then if it does not pass through the stomach give an emetic on a full stomach. Aperient medicines should be quite avoided.

Mr. Little narrated to the Med. and Chir. Society the case of a woman who had swallowed an artificial tooth-plate during an attack of epilepsy. She came under care two days afterwards. She had been unable to retain any food, and the foreign body was evidently exciting great irritation. On passing an ivory-tipped probang, Mr. Little felt it in the stomach easily, and then, with an ordinary coin catcher, succeeded in hooking it, and drew it up to the pharynx. Here the plate lodged, and some difficulty was experienced in the further extraction, which, however, was accomplished, and the woman recovered well. The plate, which had sharp, projecting extremities, measured one inch and three quarters in length by one inch and a quarter in breadth, and fixed to it were three incisor teeth, one canine, and one bicuspid. Mr. Little advocated attempts at extraction in similar cases. Mr. Curling considered that the presence of vomiting rendered the case urgent, and justified the attempt at extraction. ('Brit. Med. Journ.,' February 26, 1870.)

Œsophagotomy.—A table of twenty-one cases of œsophagotomy for the removal of foreign bodies, with only four deaths, is given in the second edition of vol. ii of 'Holmes's System,' and a table of twenty-four cases, with the same number of deaths only, is given in 'Boston City Hospital Reports,' 1870, p. 523, by Dr. Cheever.

Stricture of the œsophagus.—Dr. Morell Mackenzie narrates two cases of constriction of the œsophagus treated successfully by dilatation. He uses a hollow, gum-elastic tube, terminated with a piece of hard rubber, slit so as to dilate when a little bolt is shot down with a wire. ('Clin. Soc. Trans.,' iii, p. 182.)

Foreign body passed through the alimentary canal.—Dr. Dickinson exhibited a large pin which had been swallowed by a child between two and three years old, and was safely passed by the anus. ('Path. Trans.,' xxi, p. 169.)

Sir W. Fergusson narrates a case in which a gentleman, æt. 50, swallowed a gold pencil case. After twenty-two days it passed per rectum. It was four and a quarter inches in length. ('Lancet,' March 12, 1870.)

Tumours.—Remarkably rapid growth of hard cancer.—Mr. Savory records the case of a small, spare woman, forty years of age, in whom very rapid growth of a hard cancer of the breast occurred. She was admitted into Bartholomew's on September 14, 1869, with a cancer of the right breast, of about two and a half years' duration. In the skin of the chest, at the distance of two or three inches from the breast, were three small spots of deposit. The opposite breast was carefully examined by himself and several colleagues, without any disease being discoverable. The right breast was removed, but the cutaneous deposits left. Nine or ten days after the operation she noticed that the other breast became suddenly enlarged and hard. To use her own words, "It swelled up all at once, and has not increased since." She did not,

however, call attention to this until a fortnight after her discovery, when the whole gland appeared transformed into a hard, tense, stone-like mass. The nipple was slightly retracted, the skin seemed natural and was nowhere adherent, and the mass moved freely on the muscle below. From the date of its discovery no perceptible alteration was observed in the tumour. The wound of the operation gradually closed. The two upper spots in the skin did not alter, but the surface of the lower one became excoriated, and subsequently a small, superficial ulcer formed on it. Numerous spots came around the wound, and shortly the cervical and axillary glands enlarged. She, however, left the hospital at her own desire, and the conclusion of the case was not known. No family history of cancer could be traced in her case. Her own health, previously to the appearance of the first tumour, and, indeed, even subsequently, was very good. "I am not aware that there is on record a case in which a tumour of cancer, especially of hard cancer, has grown so rapidly as in this instance. I can vouch for the fact that immediately before the operation the opposite breast was carefully examined. It was a small, soft, flaccid gland, with scarcely any fat over it, and nothing in the least degree suspicious could be detected. There is no reason to believe that the woman was in error as to the date at which she discovered the sudden change in it; and, at all events, it is clear that within a month after the operation the entire gland was converted into a uniform, stony mass." ('Brit. Med. Journ.,' May 7, 1870.)

Mr. Bruce has recorded an interesting case of fibro-cellular tumour of the forearm involving the median nerve, in the 'Med. Times and Gazette,' Jan. 2, 1869. Amputation was performed. The patient was a woman, æt. 40, who had noticed the tumour for five years, but it had grown much faster for the preceding two months. It was about the size of an orange.

Multilocular cystic tumour of the lower jaw.—A case of removal of a large multilocular cystic tumour of the lower jaw is narrated in the 'Med. Times and Gazette,' July 24, 1869, by Dr. Beatson, of Nagpore. A woodcut of the patient before operation is given.

Nævi.—Mr. Furneaux Jordan describes a plan for the removal of nævi in pieces. A section is made through the thickness of the nævus from one side to the other, and then the nævus structure removed with scissors piece by piece. ('Brit. Med. Journal,' May 29, 1869.)

Galvano-puncture.—Dr. John Duncan writes on this subject. He considers galvano-puncture perfectly safe and effectual, but in most cases, not so convenient and expeditious as the ligature. He has treated a large nævus of the palm of the hand, not admitting of treatment by other means, very successfully, and also one of the cheek. ('Edin. Med. Journ.,' March, 1870.)

Carcinoma of the breast.—In the 'Brit. Med. Journ.,' March 12 and 19, 1870, will be found a very able and interesting clinical lecture by Mr. Savory on the treatment of cancer of the breast, especially with

reference to excision. He is of opinion that the disease, once established, is practically incurable; that is to say, that we have no means at our disposal, at present, of permanently getting rid of cancer. "The mass itself may be cut out or otherwise completely destroyed, and the patient may be for a time, for years, apparently free from all disease, but, at length, it will return and gradually destroy life. Cases may be quoted, and, indeed, are recorded, in which cancer of the breast has been removed by operation, and has never, even in the course of many years, returned; but however interesting and instructive such examples may be from another point of view, they have, practically, no bearing upon our decision in any case submitted to us for an opinion. If such instances of complete cure could be thoroughly sifted, they would turn out, to say the least, to be very few indeed. All cases are not cancer that have been described as such; but even accepting the record as it stands, it cannot materially affect our calculation of the result. We may recall such for the encouragement, if need be, of our patient, but in our judgment, we can give no appreciable weight to them." An operation, however, may remove all traces of the disease for a time, and so prolong life. About this fact there can be very little doubt. In speaking of the danger of the formidable operations sometimes necessary as regards size, he says that "I remember that Sir W. Lawrence was wont to point out how much depends on the extent of skin which it is necessary to remove. If enough of that can be left to allow the edges to come easily together afterwards, so that the large surface exposed in the operation can be covered, and nothing but a simple line of incision left, the danger is very much diminished. He thought far more of the extent of wound left open and exposed afterwards than of the amount of structure removed at the operation." "There are, unfortunately, strong grounds for believing that germs of the disease exist among the tissues wide of anything we can detect in the way of tumour, so that, after we have removed every suspicious particle, it is only too probable that there are still left behind the seeds of future growth. There is one fact that has often struck me as very significant in this respect. When the disease returns after the breast, which was apparently the exclusive seat of it, has been entirely removed, it comes back, as a rule, not in the same structure on the opposite side, not in the other breast, but in structures immediately adjacent to the original site." Mr. Savory is in favour of the constitutional character of the disease. He does not rely on any other treatment than that of excision. He would recommend removal, even in cases probably considered improper by other surgeons, as, if an operation does not cure nor prolong life, it may make death easier. If all the visible disease could be removed without much more than usual danger, even if there were enlarged glands, provided they were passive, if the patient be anxious for an operation, and understood the risks, he would not decline operating, for all the evils likely to follow are less, in his opinion, than those which an operation is the only means of removing.

In a paper on certain causes of mammary cancer the late Mr. C. H. Moore brings forward cases to show that uterine irritation may be one cause. In conclusion, he remarks—"There appears to be reason to con-

clude that, however various other causes may be, whether of innocent or malignant tumours in the breast, yet uterine or ovarian ailment precedes, with an observable frequency, the development of some mammary disease; that this disease may occupy either breast or both; that in its nature it may be a transient, though chronic, induration of a segment of the breast, which may not be a strictly anatomical segment; that it may be a dense nodular enlargement of many lobules; that it may be an innocent glandular tumour; that mammary tumours, differing in construction, though alike in cause, may thus coexist in the same person; that of concurrent tumours, not at first distinguishable from one another, some may subside on the abatement of the uterine symptoms, and one take the course of cancer; that mammary disease, following prolonged uterine ailment, may be cancer from the first." ('Brit. Med. Journ.,' October 30, 1869.)

Cancer of the skull.—Mr. Lawson Tait writes on the variety of periosteal disease of the skull generally known as fungus of the dura mater ('Med.-Chir. Review,' January, 1870). He cites numerous instances from various sources, but considers the disease undoubtedly rare. It is a cancerous disease of the periosteum, leading to perforation of the skull. The patient dies almost invariably with cancerous deposits in internal organs.*

A case is described in the 'Path. Trans.,' xx, p. 325, by Dr. Church.

Injection of caustic fluids into tumours.—M. Richet has tried the injection of chloride of zinc into sebaceous tumours of the scalp. Three or four drops of chloride of zinc, liquefied by exposure to the air, but not further diluted, were sufficient. He has also used this plan in goitre with success. If diluted with water, no result follows the injection. In a case of suppurated cervical gland an injection answered well. ('Gazette des Hôpitaux,' No. 85, 1869.)

Congenital tumour of the sterno-mastoid.—Mr. T. Smith thinks that the so-called congenital tumour or induration of the sterno-mastoid is probably due to rupture, partial or complete, of the fibres of the sterno-mastoid, giving rise to effusion of blood within the sheath of the muscle and to retraction of the torn fibres. Such rupture he refers to injury during parturition, especially when this was complicated by version and extraction. It has been surmised by some to be an adventitious growth, and by others a syphilitic deposit. Its real nature has never been determined by post-mortem examination. ('Lancet,' December 17, 1870.)

Cartilaginous and bony growths.—Mr. Birkett writes on cartilaginous and bony growths. Cases of cartilaginous tumours of the parotid region are given, and then he remarks:—They are developed at early periods of life, their growth is slow, and they cause slight inconvenience till they reach a large size, and they are innocent. They may be diagnosed by their nodular surface, more or less firmly and intimately con-

* Mr. Hutchinson had a case under care in the London Hospital not long ago. The specimen (of the calvaria) is in the museum (H. 90). Mr. McCarthy has also had a case quite recently at the same hospital. The specimen of the calvaria is preserved in the museum (H. 92).—(Ed.)

fined within the limits of the fibrous envelope of the gland. If in their removal the small gland-ducts should be wounded, a fistulous opening may remain. Excision should always be practised when the growth is small. Cartilage in the testis is taken up next, then in connective tissue, then an interesting case of development of a cartilaginous growth in an ordinary ganglion is mentioned. Mr. Birkett removed the tumour from the dorsal aspect of the left carpus of a lady. Finally, cases of extoses in various situations are collected together. ('Guy's Hosp. Rep.,' xiv, p. 475.)

A concretion in the orbit.—Mr. Croft narrates the case of a man, æt. 48, who had suffered more or less pain and inconvenience in the right orbit after a blow from a cricket bat at the age of 15. For some weeks he had suffered very severe pain; a small hard body could be felt beneath the edge of the orbit, and Mr. Croft proceeded to remove it. It proved to be a concretion, about the size of a cherry-stone, on section laminated in structure, the lamellæ being of a buff colour. Mr. Croft considered that, at the time of the blow, extravasation of blood occurred, and that the concretion formed in it. The extraction relieved the pain. ('Clin. Soc. Trans.,' iii, p. 51.)

Erectile tumour of the foot.—Mr. Poland relates a remarkable case of erectile tumour of the foot. A girl, nineteen years of age, was admitted with a soft elastic swelling, the size of a half-crown, on the dorsum of the foot, over the distal ends of the fourth and fifth metatarsal bones and spaces. There was slight swelling on the sole of the foot. The symptoms had commenced some ten years previously. After further examination indistinct pulsation was detected and elastic fluctuation. An exploratory incision let out red arterial blood, rendering the diagnosis of a blood tumour certain. Pressure on the dorsalis pedis artery emptied the tumour, and it was deemed advisable to ligature this artery. The relief was but temporary, and the swelling in the sole increased. The posterior tibial was then ligatured, and then the anterior after some time. The result was an apparent cure. Seven months later she was admitted, for the third time, with the following conditions:—A pulsating tumour on the sole and on the dorsum of the foot, reaching from the heads of the four outer metatarsal bones, backwards towards the tarsal bones, to within a short distance of the ankle-joint, bounded laterally by the metatarsal bone of the great toe on the inner side and by that of the little toe on the outer. The bodies of several metatarsal bones appeared partly eroded. The vessels were much enlarged, a bruit could be heard, and pressure on the femoral controlled the tumour. It was resolved to amputate the leg below the knee. She recovered well. The author quotes cases narrated by others, and comments on them. He considers his own case to have been one of new growth of "erectile structure," in direct communication with the arteries and veins, but not produced by dilatation of the vessels usually met with. There was no evidence to show that the disease might have originated in a nævus. As regards the diagnosis, at first a careful examination could not be made, and then there was the doubt whether it might not be an abscess

receiving an impulse. The incision, however, removed this doubt, but the question then remained as to its aneurismal character, a decided and distinct pulsation becoming developed. The patient had been under observation for twelve months before the limb was removed. After discussing the various views that have been held as to the nature of these tumours, he adopts, for his own, the designation of "*arterio-venous, erectile tumour.*" A most detailed examination of the tumour, &c., by Mr. Howse, follows. It scarcely admits of reproduction here. A tumour was found on one of the digital veins of the dorsum of the foot, two inches long and three quarters of an inch broad, irregular in shape, lobate, and it communicated with the growth on the sole of the foot. Opposite the internal malleolus there was a small tumour developed on the wall of the internal saphena vein, three eighths of an inch in diameter, and similar in structure to the other tumours. The tumour in the sole of the foot was more or less separated into lobes. The walls of a branch of the external plantar artery seemed developing into small erectile tumours, as was noted with regard to the internal saphena vein. These growths had a knotted, serpentine appearance, were much thickened, and on section found to be clearly erectile tissue developing on the arterial walls. The larger growths consisted of trabecular spaces, into which both arteries and veins were found to empty freely. The tissue between the vascular spaces showed cavities filled with gelatinous or a more yellow structure. Striated and pale fibres were also found, which Mr. Howse thinks of great importance. In answer to the question from what structures the growth was originally developed, he says from the walls of both arteries and veins, and more especially in connection with the vasa vasorum, by a mere dilatation of which the vascular spaces were in the first instance (probably) formed; the surrounding muscular elements undergoing a rapid hypertrophy and multiplication. As he regards the presence of muscular fibre in such a growth to be unique, Mr. Howse discusses its probable mode of origin at length. He considers it a development from the pre-existing involuntary fibre-cells of the vessel-walls. ('Guy's Hosp. Rep.,' xiv, p. 387.)

Nævoid elephantiasis.—Under this head Mr. Thomas Smith has described two cases in which there was great hypertrophy of one lower extremity with nævoid patches on the skin. Three illustrations are given. In the first case leg and foot were in a condition undistinguishable from that seen in elephantiasis arabum. The skin over these parts was greatly thickened, rugose, very dense and hard; here and there the surface was studded with dense, fibrous tubercles like those seen in tubercular leprosy. A few very long and coarse hairs grew about the leg and foot. The foot was matted over with thickened integuments, so that only the toes and the extremity of the heel were visible. Bandaging was practised with benefit, but the child died without known cause. The subcutaneous tissue was found greatly increased in quantity, and everywhere occupied by a dense, reticulate, spongy, venous tissue of a cavernous character. There were but few venous trunks to be seen, but everywhere a structure like erectile tissue. At the back of the limb there was an altogether abnormal

system of veins. The second case was less severe. The patient, a young woman, recovered. He thinks it is not unlikely that under the term elephantiasis arabum three diseases, quite distinct in their origin, though identical in their results, have been often included, namely, what we may term lymphatic elephantiasis, vascular or nævoid elephantiasis, and the ordinary elephantiasis arabum of climatic origin. These diseases, though arising from different causes, have this in common, that, as a consequence, the elements of nutrition (whether contained in blood, lymph or chyle) are in excess in the part affected, and that as a natural result the overfed tissues become overgrown, the overgrowth being specially manifest in those tissues that are more lowly organized, and are, perhaps, less descriminative in the materials they select for their nutrition. ('St. Barth. Hosp. Rep.,' v, p. 152.)

Enlargement of one lower limb.—Dr. W. H. Day has communicated to the Clinical Society the particulars of a case in which great enlargement of the right lower extremity existed, with occasional discharge of chylous fluid. The patient was a boy aged seven. The enlargement began at the age of two and half years. The case was regarded as one of elephantiasis with disease in the lymphatic system. To this is appended a note of a case of varicose lymphatic vessels of the right lower extremity by Mr. Berkeley Hill, and one of enlargement of the right lower extremity with chylous discharge by Dr. Cholmeley. ('Clin. Soc. Trans.,' ii, pp. 104—119.)

Removal of a tumour from the pterygoid fossa.—The following very remarkable case is narrated in the 'Lancet,' May 29, 1869, by Dr. P. H. Watson. The patient, Margaret B—, æt. 60, was admitted into Chalmers' Hospital, Edinburgh. She gave the history that seven years before she had noticed a swelling along the lower border of the jaw in front of the angle, and a fulness in the region of the parotid upon the right side. These swellings were followed six months afterwards by a third bulging towards the buccal cavity. They steadily increased, but especially towards the buccal cavity. On admission a large tumour was seen occupying the parotid and submaxillary regions. On opening the mouth nothing but the rounded surface of a large tumour could be seen immediately behind the teeth, hiding the fauces posteriorly and concealing the tongue from view. The tumour gave an elastic resistance (semifluctuating), and the mucous membrane was movable over it. Difficulty of swallowing had existed for two years. Dr. Watson gave the diagnosis of a simple growth springing from the pterygoid fossa and growing in the direction of least resistance on account of—1, the slow growth of the tumour; 2, the non-implication of surrounding structures; 3, the entire absence of all cachexia. A large trochar and canula were introduced from the mouth and a pellet removed. This was composed almost entirely of a fibrous stroma, enclosing minute, nucleated cells and nuclei in the form of rounded masses. The tumour was a simple, glandular one, analagous to those met with in connection with the mammary gland, or within the parotid fascia, or in the substance of the prostate. *Operation.*—An incision was made in the

middle line of the lower lip, and then along the lower border of the jaw on the right side to midway between the angle and the condyle. The structures were dissected up as far as the bicuspid teeth, and the jaw was sawn through at this spot, and by a few touches separated from the soft parts on its inner surface. The base and angle of the jaw were turned outwards at right angles to the zygoma, exposing the tumour. The mucous membrane covering it was divided, and it was then separated from its attachments, and in doing so the tonsil, internal carotid and jugular, and the eighth, ninth, and lower part of the fifth nerves were exposed. Very little blood was lost, and after sponging all the parts well the ramus of the jaw was put in place and fastened with wire sutures. The wound healed well, and in a month the patient was discharged well. Six months afterwards she was in good health. The tumour was lobulated, smooth and glistening on its surface; the fibrous capsule loose and filamentous. The mass was made up of lobes, and these again of lobules or leaflets, not unlike the arrangement in the cerebellum. The substance was freely lacerable under the fingers. Dr. Watson remarks, "So far as I have been able to learn, no case of simple tumour occupying this situation and growing inwards towards the throat has ever before been placed on record. Similar growths in connection with the parotid, under the parotid fascia, displacing or causing atrophy of the gland, and bulging externally from behind the ramus of the jaw, are sufficiently common, and have frequently been removed." "The method of procedure was also, I believe, quite novel for the purpose of removing a tumour. A somewhat analogous mode of operation was recommended by Mr. Guthrie as a preliminary to ligature of the internal carotid, though, so far as I am aware, it was never carried out in actual practice." A figure of the tumour is given.

Ranula.—M. Gosselin has had a case considered to be one of ranula of the floor of the mouth in which the cyst-wall on microscopic examination proved to belong to a hydatid cyst, and showed a number of hooklets. ('Gazette des Hôpitaux,' No. 55, 1869, quoted 'Edinb. Med. Journ.,' March, 1870.)

Death from the strangulation of an ovarian tumour.—Mr. Lawson Tait was called in to see a woman, aged 48, who was suffering from a strangulated femoral hernia. The stricture was divided without opening the sac. The patient, however, gradually sank, the chief symptom being tympanitis. At the post-mortem examination a black, gangrenous mass was found lying in the cavity of the right ilium. This was proved to be an ovarian tumour with a long and thin pedicle, which had become twisted four and a half times on itself, thus strangulating the mass. ('Edin. Med. Journal,' Dec. 1869, p. 502.)

Hydatid tumour simulating ovarian.—In connection with a case of hydatid tumour of the abdomen taken from an ovarian tumour, and in which an operation was successfully performed, Mr. Bryant remarks that should he have a similar case he would be inclined to adopt the same operative procedure again. Of course no attempt at removal should be made. As soon as an incision is made, and the nature

of the case ascertained, all that can be done is to turn out the secondary cysts, and then wash the parent cavity out repeatedly. In this case the cyst contracted very quickly, and the patient soon recovered. ('Guy's Hosp. Reports,' xiv, p. 241.)

Suppurating cysts.—In the treatment of suppurating ovarian cysts Mr. Bryant has practised incision in the middle line, with the result of a perfect cure. He recommends that in the first instance only a small incision should be made, to place the fact of suppuration beyond doubt, and then this should be enlarged upwards and downwards. When the cyst has suppurated the result is always fatal, without interference, and no interference should be attempted till the patient is severely affected by the disease. ('Guy's Hosp. Reports,' xiv, p. 220.)

Treatment of the pedicle.—Mr. Bryant records a case in which a double ligature, which he had applied to the pedicle, came away through the wound on the twenty-sixth day. Somewhat similar occurrences on other occasions led him to doubt the advantage of the plan of leaving a foreign body of any description in the abdominal cavity. On the whole, however, he knows no better plan than that of ligaturing the pedicle in two halves, and he adds a hint to *cross* the ligatures as they lie together before being tied, so that when each is drawn tight there is no tendency to cut the pedicle in two. ('Guy's Hosp. Reports,' xiv, p. 230).

Menstruation from the pedicle after ovariotomy.—Mr. Bryant calls attention to this, and asks whether it occurs when the pedicle is returned into the abdominal cavity, as well as when it is left outside, fastened by the clamp? His conclusion is that there is no evidence to show that menstruation occurs from an open pedicle returned within the abdominal cavity, but he can give no reason for the difference. ('Guy's Hosp. Reports,' 1869, p. 233.)*

Removal of dermoid cysts of the broad ligament by abdominal section.—This case is detailed by Dr. Gibbes at great length. A woman, aged 26, eight days after a difficult labour, was noticed to have a tumour of less size than the fist, in the *right* hypogastrium, so extremely mobile that it could be pushed up to the gall-bladder. One month later the tumour seemed more connected with the bladder. It could then for the first time be felt per vaginam. On the whole, the conclusion was in favour of its being malignant and omental. The operation was performed as usual for ovariotomy. The tumour was found to be of the *left* broad ligament, and about two inches of the Fallopian tube was removed; the ovary was considered to be left behind, and could be apparently felt (a doubt was afterwards raised about this). The cyst was found to contain thick curdy pus, with fat-globules and a mass of fine black hair. She recovered, and menstruation occurred through the wound for four successive periods. Some ventral hernia resulted. ('Amer. Journ. Med. Sciences,' Oct. 1869.)

* A case of menstruation from the pedicle will also be found in the 'Amer. Journ. Med. Sciences,' Oct. 1869.—(Ed.)

Vaginal ovariotomy.—Dr. Thomas records a case in which he removed a small ovarian tumour through the vagina. ('Amer. Journ. Med. Sciences,' April, 1870, p. 387.)

Ovariotomy at an early age.—Mr. Bryant has performed ovariotomy on a girl of fourteen years of age, in whom the tumour had developed in six months. The patient recovered. ('Guy's Hosp. Reports,' xiv, p. 216.)

Ovariotomy statistics.—In the 'Med.-Chir. Review,' Jan. 1869, will be found a detailed table of 111 cases in which Mr. Baker Brown performed ovariotomy, compiled from his work; a summary of the results obtained by Mr. Bryant and Mr. Spencer Wells; and, lastly, a table of results of 244 cases. From the latter it is seen "that the mortality per cent. is least during the first quinquenniad; that it rises up to 26, when it becomes pretty stationary until the age of 51, with the marked exception of the quinquenniad 41 to 45, and then falls until the age of 60." From 15 to 20 there were 17 recoveries and 4 deaths (19·05 per cent. deaths). From 21 to 25 there were 20 recoveries and 7 deaths (25·92 per cent.); then till 41 about 33 per cent. of deaths, and from 41 to 45, 28 per cent. From 51 to 55 there were 17 recoveries and 4 deaths, as in the first quinquenniad. The greatest number of operations occurred between 31 and 35; of 123 cases in which the adhesions were slight, death occurred in 34; of 100 cases in which the adhesions were firm, death followed in 38; that is, 27·64 per cent. against 38 per cent.

In the 'Edin. Med. Journ.,' Oct. and Dec. 1868, and May and June, 1869, Mr. Thomas Keith narrates 14 cases of ovariotomy, which were all successful and all in succession. In the number for March, 1869, it is stated that Dr. Keith mentioned to the Med.-Chir. Soc. of Edin. that he had had 84 ovariotomies, with 70 recoveries and 14 deaths. Of the last 25 all had recovered but one. In the 'Lancet' for Aug. 20, 1870, the same operator gives details of a second series of 50 cases, the first series having been published in the 'Lancet' for Sept. 7, 1867. In the first 50 the mortality was 22 per cent.; in the second 50, 16 per cent. Five other cases operated on since have recovered. Of the 100 cases recorded, 81 recovered. No case was operated on in a hospital.

Mr. Wells tabulates his recent cases of ovariotomy in 'Med. Times and Gaz.,' Sept. 3, 1870. In his early experience he had a smaller mortality among hospital patients than in private, then the results were equal. During the last two years the advantage has been on the side of private patients. During the last two years he had operated on 47 cases in hospital, with a mortality of 40 per cent. In private he had operated on 57 patients, with a mortality of 24 per cent., which compared with the 40 per cent. in hospital, is a startling difference.

Mr. Spencer Wells has contributed his third series of 100 cases of ovariotomy to the 'Med.-Chir. Trans.' (lii, p. 197). He states the results to have been—of the first 100, 34 died and 66 recovered; of the second 100, 28 died and 72 recovered; of the third 100, 23 died and 77 recovered.

Of 20 cases in which the operation was completed, 17 recovered and 3 died. Of 4 in which an exploratory incision only was made, 1 died, and in another case of cancer the patient died. These were operated on by Dr. Sven Sköldberg, of Stockholm. ('Med. Times and Gazette,' Dec. 11, 1869.)

Removal of the uterus and its appendages.—In a communication made to the Academy of Medicine in Paris, on December 7, 1869, M. Péan related the history of a case in which he had removed the uterus and its appendages. The patient, an unmarried woman, æt. 41, came under M. Péan's care, complaining of an abdominal tumour and its attendant grievances. An examination led to the diagnosis of a multilocular ovarian cyst, together with a fibroid tumour attached either to the right ovary or the fundus uteri. An operation was performed on September 22, 1869. Chloroform having been given, the abdomen was opened by an incision from the pubes to eight centimètres above the umbilicus. A multilocular ovarian cyst was first brought into view; this was emptied by numerous punctures, and was detached piecemeal from its connections, which were confined to the posterior surface, and were very firm. The uterus was largely hypertrophied, extending as high as the umbilicus; it was closely adherent to the cyst on the right side and posteriorly. The right ovary was the seat of a fibrous tumour, measuring twelve centimètres in length and six in breadth, and adherent to the cyst-wall. The Fallopian tube was much hypertrophied, and was distended with a fluid resembling that found in the ovarian cyst. These conditions, together with the difficulty of restraining the bleeding from the uterus at the part where the adhesions had been detached, lead M. Péan to undertake the removal of the whole uterus with its diseased appendages. The wound in the abdomen being enlarged, the intestines were held aside by assistants, and M. Péan raised the uterus with the tumours, in doing which he found that the hypertrophy had involved the neck. He passed, by means of a long needle, a loop of iron wire through the cervix and the vagina, and thus formed two ligatures, by tightening one of which he isolated the greater part of the cyst, a portion of the broad ligament, and the corresponding part of the cervix uteri; while by the other, on the right side, the remainder of the uterus, the whole of the broad ligament, and the tumours, were separated. On the third day sphacelation of the ligatured portions commenced; this was attended with the discharge of a blackish, fetid fluid, and the wound was dressed with perchloride of iron. On the sixth day the sloughed parts were removed, and three india-rubber tubes were introduced into a portion of the cyst which had been left at the base of the pelvis. The object of these tubes was to allow the escape of purulent secretion, and to facilitate the use of antiseptic injections. On the twenty-fifth day the portion of cyst left in the pelvis was thrown off. In six weeks the patient, whose progress throughout had been satisfactory, was able to sit up, and at the date when M. Péan made his report she was quite well.

Subcutaneous section of the infra-orbital nerve.—B. von Langenbeck describes ('Archiv für Klinische Chirurgie,' xi, 1869) a method of neu-

rectomy which he believes will be found simple and safe. He has, as yet, performed the operation only once, viz. in 1862, in a case of facial spasm. In the cases of infra-orbital neuralgia, which have subsequently come under his care, he has followed Malgaigne's plan of dividing the nerve and the lower wall of the orbit. This plan succeeds in most cases, without great drawbacks; in three cases the operation-wound healed almost without suppuration. But he has also seen unpleasant results. In two cases the neurectomy was followed by purulent effusion into the antrum of Highmore, which lasted several weeks, and, in one patient, was attended with exfoliation of a portion of the lower wall of the orbit. In a third case there was prolonged suppuration in the orbit, with—apparently as a result of the retention of pus—facial erysipelas, which nearly brought the patient, an aged man, to the grave.

These mishaps led Langenbeck to make application of an operation, which he had several times, in the course of three years, performed on the dead body. In some cases, indeed, the nerve was only partially cut through or not at all, a failure which he attributes to the varying conformation of the orbit; but, as a rule, the nerve was divided and the entire portion, lying in the infra-orbital canal, could be drawn out.

In order not to miss the nerve at its entrance into the infra-orbital canal, the following anatomical conditions must be remembered. The inferior orbital or spheno-maxillary fissure, lying between the sharp edge of the orbital process of the superior maxilla and the orbital surface of the great wing of the sphenoid bone, passes outwards and forwards, and ends six or seven lines behind the lower margin of the orbit, at the point where this passes into the outer wall formed by the frontal process of the malar bone. The infra-orbital nerve passes from the spheno-maxillary fissure into the posterior opening of the infra-orbital canal, which is situated about eleven lines behind the infra-orbital margin of the malar bone; it then has a course obliquely inwards and forwards to the infra-orbital process, where it makes its exit.

If a tenotomy-knife be carried backwards and outwards, along the orbital surface of the frontal process of the malar bone and the great wing of the sphenoid bone, so that it shall never leave the surface of the bones, it necessarily reaches the inferior orbital fissure, behind the opening of the infra-orbital canal.

The operation is performed in the following manner:—A strong Dieffenbach's tenotomy-knife, the handle of which is held by the thumb and fore and middle fingers, like a pen, is thrust, with its point directed backwards and downwards, at an angle of about 60°, close under the external, palpebral ligament, and is gradually pushed, in a direction backwards and downwards, along the outer wall of the orbit. Its entrance into the inferior, orbital fissure is readily denoted by the cessation of resistance. This point having been reached, the edge of the knife is turned somewhat inwards towards the sharp edge of the orbital process of the superior maxilla, and, touching the latter, is carried forwards with a sawing motion. The infra-orbital nerve is then set free at its exit from the infra-orbital foramen. At this point an incision about half an inch long is made perpendicularly downwards from the lower border of the orbit. The nerve is then raised by means of a blunt hook

and seized with a broad flat forceps. By a twisting motion the nerve, if it have been completely divided in the inferior orbital fissure, is readily drawn out, and is then cut off at its entrance into the soft parts of the cheek. If the nerve be not readily withdrawn, the first stage of the operation must be repeated.

This operation has the advantages of only slightly injuring the orbit and leaving only a slight scar over the infra-orbital foramen. With regard to the question whether the wounding of the infra-orbital artery, and, perhaps, also, of the internal maxillary, may not be attended with unpleasant consequences, Langenbeck remarks that the first-named artery is probably always wounded, as the knife must be carried close against the posterior edge of the orbital process of the upper jaw-bone. In the case on which he operated, however, there was only some slight extravasation, denoted, for some days after the operation, by slight doughiness of the tissues between the eye and the outer wall of the orbit. The internal maxillary artery can only be wounded by carrying the knife more deeply than is necessary towards the pterygo-palatine fossa.

R. Assmann describes, in the 'Archiv für Klin. Chirurgie,' xi, a case in which Dr. Hahn operated, according to Langenbeck's method, for division of the infra-orbital nerve. The patient was a woman, aged 63, who had for twelve years suffered severely from neuralgia of the fifth nerve, on the left side. There was rather considerable extravasation of blood into the loose cellular tissue of the orbit—a circumstance which Assmann regards important, as denoting the probable, if not certain, division of the nerve. The nerve, having been drawn out of the orbit, was cut off to the extent of about four centimètres. The patient felt relieved immediately after the operation. Cold water was applied to the eye, a light, compressive bandage was placed over, and the edges of the wound on the cheek were brought together by plaster. At the end of three days there had been but little suppuration, the wound was healing, the extravasated blood had become absorbed, and the neuralgia had totally disappeared. The patient was obliged to return to her home at a distance from Berlin, and no further account of the case could be obtained.

Dr. C. Hueter, of Greifswald, describes, in the 'Archiv für Klin. Chirurgie, xi, a case in which he performed excision of the infra-orbital and lingual nerves. A man, aged 54, came under his care in Nov. 1868, with neuralgia of the fifth nerve on the right side. In September, 1867, neurectomy had been performed on the right supra-orbital and infra-orbital nerves, on account of neuralgia, the operation on the latter nerve being done after Malgaigne's plan, in which the floor of the orbit is divided. The operations, as far as these two nerves were concerned, were quite successful; but, in the autumn of 1868, violent neuralgia set in, in the course of the lingual and inferior maxillary nerves, especially the latter. The application of the continuous galvanic current gave no relief, and, at the request of the patient, Dr. Hueter operated on Dec. 15, 1868. A semilunar incision was made, commencing at the hinder part of the ramus of the lower jaw, passing round the angle for about two centimètres, and then upwards to the inner edge of the ramus. The flap, consisting of skin, masseter

muscle, and periosteum, was then raised, and the nerve was laid bare in the alveolar or dental canal by means of a fine chisel. The nerve was followed to the point of entrance into the bone, and a portion, about two centimètres long, was excised. Dr. Hueter then cut away the part of the ramus lying in front of the dental canal, and thus exposed the lingual nerve at the part where it lay beneath the outer edge of the external pterygoid muscle, between the internal pterygoid and the posterior, periosteal surface of the ramus. A piece of this nerve, about two centimètres long, was excised. The wound healed, and the patient was discharged on Jan. 30, 1869. A salivary fistula was produced by the wounding of some of the lobes of the parotid gland, but yielded to a few cauterizations. The gustatory nerve was so far impaired that quassia could not be tasted by the anterior part of the tongue, on the right side, the sensation remaining perfect on the left. After a short time severe neuralgia set in, in the branches of the fifth nerve on the *left* side, especially the infra-orbital, and was attended with reflex twitchings of the facial muscles. It being apparent that no remedy would avail but excision, Dr. Hueter performed this, on the infra-orbital nerve, on March 8, 1869. The operation resembled, in its essential features, that of Langenbeck, of whose proposal, however, Dr. Hueter was not at the time aware. He used a Dieffenbach's tenotome, modified by having the cutting edge made about a centimètre longer, the back somewhat stronger, and the point blunted, but not knobbed. The result was the complete relief of the patient from his neuralgia, which had not returned more than two months afterwards.

Exsection of Meckel's ganglion, &c.—Dr. Conner writes on this subject, and shows that the results have not been by any means encouraging, and he doubts whether the removal of the ganglion is of much importance for anatomical and physiological reasons. ('Amer. Journ. Med. Sciences,' Oct., 1870.)

Operation for neuralgia of the face.—In the 'Amer. Journ. Med. Sciences,' Oct., 1869, is a note of a case of facial neuralgia, recorded by Dr. Wm. H. Mussy ('Cincinnati Lancet and Observer'). The superior maxillary nerve, with Meckel's ganglion and the inferior maxillary nerve, were removed on the plan of Dr. Carnaghan. The patient was a man, aged 32. He had suffered five years. Four months later he was free from pain.

Exsection of nerve trunks.—In the 'Amer. Journ. Med. Sciences' (July, 1869), a case is recorded by Dr. Blackman, in which he removed the greater portion of the inferior dental nerve, and also the second division of the fifth nerve beyond Meckel's ganglion, for facial neuralgia. Numerous remedies had previously been tried, and a portion of the inferior dental nerve had been removed with temporary relief. The inferior dental nerve was reached by an incision along the base and ramus of the lower jaw, and the whole of the nerve, from its entrance into the bone, to the mental foramen, was removed. The superior maxillary nerve was reached from the front, the anterior and posterior walls of the antrum being broken through, and the nerve divided, with scissors, close to the foramen rotundum, after the manner adopted by

Dr. Carnochan. The patient was quite free from trouble sixteen months after the operation.

Other cases operated on by other surgeons are mentioned.

Dr. Blackman notes that in his case the pain returned with almost increased violence twenty months after operation (Oct., 1870).

Removal of a polypus from the ventricle of the larynx.—Dr. Richardson having diagnosed a pedunculated polypus springing from between the superior and inferior vocal cords on the right side, and having been unable to remove it with forceps, determined to operate. An incision was made in the middle line of the neck, from the hyoid bone to the lower border of the cricoid cartilage. The thyroid cartilage was divided with scissors in the median line; its lower part was ossified. The polypus was then cut off with scissors. The patient was at once able to "run up and down the scale;" chloroform had not been given. The edges of the wound could not be brought together without the sutures being at once torn open by cough. The patient did well, and the wound was healed on the thirty-ninth day. Woodcuts of the larynx before, during, and after the operation are given, and drawings of microscopic sections of the tumour. The author concludes that there are certain polypi which can only be removed by opening the larynx, but this ought to be done only to the smallest extent possible. In this case the tumour was known to be of the ventricle, and therefore only the thyroid cartilage was divided, not the membranes. To the slight extent of the incision the perfect cure is probably due. The microscope showed the tumour to consist of fibrous tissue and of glands. ('Med. Times and Gazette,' Nov. 20, 1869.)

Army hospital gangrene during the American war.—In the January and April numbers, 1869, of the 'New Orleans Medical Journal,' will be found an article on the subject of hospital gangrene from the pen of Dr. Joseph Jones. The sources of his experience were the hospitals attached to the Southern armies during the American civil war. He states that in many cases the appearance of gangrene in the wound was preceded by fever ushered in by a chill; but as the influence of malaria was also frequent among the soldiers, it was sometimes difficult to assign the chill and fever to their true causes. In some cases reported to him there was said to have been nothing of this kind. Its mode of origin may be looked at in four ways—as a local disease, depending on contact with putrid, animal matter; as a constitutional disease, depending on imperfect hygienic conditions; as both local and constitutional in character; and, finally, as the result of a specific poison. The author adheres to the third view, for, from his experience, hospital gangrene may arise in those exposed to exhalations from gangrenous wounds, without abrasion of surface; that it may be communicated without direct contact; that in some cases it does not make its appearance immediately after exposure to contagion; and, finally, that in crowded wards the condition may be propagated within the system with such rapidity that death may result before much local change has taken place.

In many cases of gunshot wound which subsequently became gangrenous, the attention of the patient was first directed to the wound by a pricking and darting pain like that of ten thousand needles; in others there was stinging and itching only, whilst in others there was little or no local pain or uneasiness. In some instances the wounds first of all became dark red and glazed, both granulations and pus disappearing, whilst a reddish or greenish sanious and fetid discharge followed. The wound would become smaller and ragged, and finally appear as a greenish or greyish gangrenous mass. When the wounds were extensive, the gangrene would appear in several spots, and from these gradually spread. In bad cases the gangrene would appear in from twenty-four to seventy-two hours after an operation. The blood-vessels around a gangrenous wound are always engorged with blood, and in several instances rapid recovery followed a hæmorrhage from these. When the system is thoroughly poisoned, gangrene will sometimes make its appearance remote from any wound, and without any apparent, adequate cause. In such cases a blue or purple spot is first seen, the cuticle being sometimes raised and containing serum. In bad cases the skin may apparently dissolve away before the gangrene. The adipose and connective tissues give way most readily; the muscles, nerves, large blood-vessels, and bones less so, though the blood-vessels give way more frequently than in certain other forms of gangrene—hence hæmorrhages are more common than in these. Sometimes the skin may appear healthy when the tissues beneath are gangrenous. When gangrene ends favorably, the healthy surface becomes bright red and its granulations are exquisitely sensitive, but even after this death may result from exhaustion. The gangrenous matter consists of the various tissues in a disorganized state, together with the products of these. Pus-corpuscles are absent, and their appearance is to be esteemed a favorable sign. Living organisms may also be detected. Dr. Jones does not think that there is any necessary connection between gangrene and scurvy. The two may exist together, and, when so, their ravages are frightful; and it is difficult, if not impossible, to eradicate the gangrene without treating the scurvy. The essential nature of hospital gangrene Dr. Jones considers to be inflammatory, and that its local manifestations give rise to general febrile action as the result of the poison. There is also a marked difference between the temperature of the extremities and that of the trunk, depending on general weakness and imperfect circulation. In its course this disease would seem to observe no uniform period, either with regard to death or to recovery, the condition of the patient's bodily health influencing very greatly the result. The disease is especially dangerous when in, or near, a large joint, or along the track of important vessels or organs. Dr. Jones has never seen a case recover in which either the knee or the hip-joints were laid open, or even where the elbow-joint was opened, unless the limb was amputated. As the result of the gangrene, contraction and deformity will result, and the amount of this in no way depends on the importance of the primary wound. Care should be taken to keep the parts in a proper position, whilst long-continued pressure should be avoided as almost certain to cause gangrene.

The causes of death are stated to be—progressive failure of power, as from lead poisoning; repeated hæmorrhages from eroded vessels; the entrance of air into eroded veins; the opening of large joints; the formation of extensive bed-sores, which tend to become gangrenous; diarrhœa from the effects of the poison; extensive disorganization round the wound; gangrene of internal organs; invasion of organs essential to life by the gangrene; pyæmia; phlebitis; and various constitutional and local sequelæ. Dr. Jones urges the importance of treating the wounded near to the scene of action. Cleanliness, free ventilation, and the use of disinfectants, are insisted on. Tonics should be given internally; locally, strong nitric acid should be freely applied, so as to destroy the surface, and the slough should be dissected off.

Perforating ulcer of the foot.—In the 'Brit. Med. Journ.,' June 26, 1869, Mr. Hancock publishes some "Remarks on Perforating Ulcer of the Foot." A young man, of twenty-four, was attacked, twenty years before he came under care, with swelling and inflammation of the great toe of his right foot. After some time an opening formed on the under surface of the metatarso-phalangeal joint, which continued to discharge, and a peculiar excrescence formed round the opening and gradually increased, but gave him so little pain that he was able to go to school and move about his father's farm with little inconvenience, although there was always more or less discharge. In the course of the next five years a similar sore appeared in connection with the little toe. Five years afterwards the disease attacked the sole of the foot near the tarsal bones. For eighteen years he was able to walk about, but, for the two years before he came under care, this had been prevented by acute pain in the ankle and heel. When seen, the foot was swollen and somewhat distorted, the soft parts presenting a brawny hardness; the great toe was enlarged and misshapen, and there were various ulcerated openings, discharging offensive matter, at the situations already indicated, as well as on the dorsum of the foot. The foot was removed by Pirogoff's amputation. The notes of three other cases were sent by Mr. Wilkes, of Salisbury. A man aged thirty-nine had suffered for twenty years. The first symptom was a painful corn under the ball of the great toe. Ultimately the metatarsal bones of both feet became affected, but the right much more so than the left. Pieces of bone came away. His mother and two sisters had suffered in a similar manner. Syme's amputation of one foot was performed. A gardener, aged twenty-one, had had disease of both feet for three years. It commenced as hard corns under the metatarso-phalangeal joints of the great toes. The third case was a male cousin of the preceding, and twenty years of age. Both feet had been affected for four months. The father of the former patient had suffered from a weeping corn under one of his great toes for four or five years before he died of consumption at the age of forty. The brother of the last patient had bad feet for years, with discharging corns and diseased bones. He became quite crippled.

"This peculiar and serious affection has scarcely been noticed in

this country, but appears to have been noticed first in France by M. Cloquet in 1837." Boyer, Marjolin, and Nélaton have written on it. The latter describes it as commencing as a phlyctenula on the pad of the foot. The epidermis is raised by a small quantity of purulent serum, and the subjacent dermis appears of a rose colour, and when touched is highly sensitive. A detailed history of a patient is given. During twelve years this patient underwent six operations on one foot (the last being entire removal) and three on the other one.

Vesigné, writing shortly after Nélaton, describes the disease as beginning in a hard corn. A case is described. He considered the disease to begin in the skin and subcutaneous structures. In this case the disease had lasted twenty years.

In conclusion, Mr. Hancock remarks on the nature of this disease, which Nélaton calls "perforating ulcer of the sole of the foot." Is it, as Vesigné considers, a variety of plantar psoriasis? Is it due to syphilis? "I fear that our knowledge is too limited to answer these questions. All agree as to the locality of the origin being the pad of the sole of the foot, corresponding to the heads of the metatarsal bones, especially that of the great toe, due, doubtless, to the pressure exerted on this part by the superimposed weight of the body. At the same time it is evidently constitutional, as in the first case which I have here narrated, the patient's hand was similarly affected, whilst Nélaton informs us that his patient (a cabinet-maker) was frequently obliged to leave off his work for a time in consequence of his hands being threatened with a similar mischief. Again, the disease is hereditary. Nélaton's patient was one of six brothers, of whom two were suffering and one had already died of the complaint. The first, third and fifth were free; the second, fourth and sixth were the victims. In Mr. Wilkes' first case the mother and two sisters (all of whom died) had the same complaint. The mother was sixty when she died; all her toes were gone. The sister's feet were extensively affected. The subjects of the second and third cases were cousins; the father of the second and the mother of the third suffered. The results of treatment have been most unsatisfactory." Vesigné tried Fowler's solution with apparent benefit, but the disease returned. "If we accept the doctrines of Nélaton and Vesigné, nothing remains but to leave the patient a hopeless cripple. Both these surgeons, however, it seems to me, have overlooked facts of the greatest importance; first, that the disease invariably commences in the region of the anterior extremities of the metatarsal bones and their joints with the toes, that its tendency is to confine itself to this region, and that its progress towards the tarsal bones is marked by extreme tardiness; and, second, by the complete immunity of the heel. We are left in doubt by Nélaton whether constitutional treatment was employed antecedent to, or combined with, the various operative procedures. Consequently, in the first instance, it would be our duty to remove the sequestrum and diseased soft parts, and to give the patient the benefit of constitutional remedies combined. But if, notwithstanding, the disease returns, there can no longer be a question, considering the complete success attending Pirogoff's amputation in my case, and Syme's amputation by Mr. Wilkes and by Mr.

Coates, as well as the immunity of the heel region already alluded to, that, although, as a general rule, we should sacrifice as little of the foot as possible, this is an exceptional disease; and that, when once perforating ulcer of the sole of the foot is established and recognised, it is better at once to remove the whole of the metatarsal bones, either by Chopart's, Syme's or Pirogoff's amputations, than by palliative operations and remedies condemn our patient to a succession of painful disappointments." In a letter (appended to these remarks) from Dr. Haynes, of Salisbury, a report is given of a clinical lecture of Nélaton's in 1866. "It is an Eastern disease, for which no cure is known. It commences by a little induration of the skin of the heel, between the tubercles of the os calcis." Ulceration occurs, there is considerable discharge, and soon the os calcis can be felt bare. "The head of the first metatarsal bone is the next osseous part diseased." "The man at present in hospital is rather old (forty-eight) to have it, it being usually found in young men. The disease has not penetrated beyond the skin." Further remarks were made on an opening which subsequently formed in the "centre of a circular, depressed, black portion of skin of the size of a shilling, and looked as if it had been cleanly punctured out," without any puriform discharge. The result is not given. See also M. Gosselin on this subject in 'Retrospect,' 1867-8, 243. 'Med.-Chir. Review,' April, 1869, chronicles that Adelmann ('Prag. Viertel.,' i, 1869,) gives a critical review of sixteen French cases that have been published, and adds four which were met with in the Dorpat clinic. Flora ('Allgem. Wien. Med. Zeit.,' December 15) narrates numerous cases observed during the author's residence in Europe.

In the 'British Medical Journal,' April 2, 1870, is a brief abstract of some remarks made by Mr. Erichsen on the case of a man suffering from a "perforating ulcer of the foot." Such cases, he said, were unusual, and of great practical interest. In the case under notice there were the remains of a hard corn to be seen on the sole of the foot, while, on the corresponding part of the dorsum, was a small ulcerated aperture, from which pus was discharged. This ulcer was situate between the third and fourth metatarsal bones, very far back. On introducing a probe into the dorsal wound it made its exit in the sole through an aperture in the centre of the corn, there being a sinus which perforated the foot. The probe passed close to the bone (the neck of the third metatarsal), but no necrosis nor caries could be felt. Here, then, was a sinus perforating the foot in a man otherwise healthy, there being no signs of struma or of any constitutional disease. How was it to be explained? It appeared that he first noticed the corn about eighteen months before he came under care. Suppuration took place in the subcutaneous cellulo-adipose tissue, and the pus escaped through an aperture in the centre of the corn. This aperture subsequently closed, and the pus, travelling upwards, finally made its exit through the integumental structures of the dorsum of the foot. In the treatment of such cases, if there be diseased bone, it should be removed. In this case there was none, so the same line of practice was adopted as in the treatment of any sinus, viz. stimulation. A seton of two silk threads was intro-

duced, which kept up a free opening in the sole, and at the same time stimulated the sinus by the irritation set up by its presence.

M. Sédillot writes on the subject ('Contributions à Chirurgie').

Influence of the weather over the results of surgical operations.—Dr. A. Hemson writes on this subject in the 'Penn. Hosp. Rep.,' ii, p. 17, 1870. An abstract is given in the January number of the 'Med.-Chir. Rev.,' 1871.

General emphysema.—In the 'Biennial Retrospect,' 1867-8, p. 332, is an abstract of Dr. Mapother's case of general emphysema from rupture of the lung.

Mr. Jessop records a case ('Brit. Med. Journ.,' September 25, 1869) produced by violent screaming. A child, eight years old, suffering from an affection of the ankle, began to scream violently one morning, and continued to do so, without intermission, the whole of the day and the next night. Early the following morning a little puffiness was noticed on the left side of the neck, and it rapidly increased. In four hours the head, face, neck, chest, and abdomen had become enormously distended. Air could be felt in the cellular tissue all over the trunk and down the arms as far as the wrists; none could be detected in the legs and thighs, or, indeed, below the groin on either side. The skin was punctured in many places, and brandy was administered. He continued to scream, and gradually became weaker, but without any difficulty of breathing. He died eight hours after the first appearance of the emphysema. At the post-mortem examination, on opening the chest and abdomen, a large quantity of most offensive air escaped, and the muscles of the abdomen alone were observed to be completely blackened. The abdominal contents appeared natural. The mediastina were found to contain air, but, although they were somewhat distended, Mr. Jessop could not satisfy himself that the lungs had been greatly impeded in consequence, and this would account for the length of time (considering the extent and degree of emphysema) during which he lived. No extravasated air could be detected beneath the pulmonary pleuræ, except at the roots of the lungs. On a close inspection of the outer surface of the right lung a very thin film of recent lymph was observed, and, at irregular intervals, there were very small, immovable elevations, the largest of which was about the size of a pin's head. On cutting into these they were found to be small irregular cavities, containing air and a little red-coloured serum. Eight of them were counted on the front, external surface of the lower lobe of the right lung, and none could be found anywhere else. On microscopic examination, the lung tissue, which showed no signs of degeneration, was found torn at these places. Mr. Jessop calls attention—1. To the cause of rupture; the violent and long-continued compression to which the lung was subjected in the production of a series of loud shrill notes. The glottis would, necessarily, be nearly closed, thus offering a great impediment to the exit of air, whilst the expiratory efforts were the greatest of which the boy was capable. 2. The age, eight years. Dr. Mapother states that, "of thirty-eight recorded cases, thirty-four were in children under

four years." 3. The great number of points at which the lung tissue had given way; eight had been found on the surface beneath the pleura, whilst the most usual situation is near the root. 4. The small quantity of air found in the mediastina. 5. The immediate cause of death; probably found in the occurrence of a succession of injuries to a vital organ rather than in the interference with respiration by the pressure, upon the lungs, of the extravasated air.

Treatment of carbuncles.—Mr. Paget, in a lecture on the subject in the 'Lancet,' January 16, 1869, advocates treatment without incisions. He asserts that as large a proportion of carbuncles will spread after incisions have been made into them, as in cases in which no cutting has been practised. Incision does not relieve pain as much as is generally asserted. If practised within the first four or five days, while they are still hard and brawny, it may relieve some measure of the suffering; at a later period the incisions have no influence at all. The cutting does not even hasten the removal of the sloughs and the process of healing. Time after time it may be seen that those uncut heal more quickly than those that have been cut. The plan of giving large quantities of food and of stimulants is decidedly hurtful. The best treatment is of a local kind. At first a piece of Emp. Plumbi, with a hole in the centre, then resin cerate on lint, covered over with a large poultice (half linseed, half bread); then, later, carefully washing of the sore with some deodorising substance. The importance of cleanliness cannot be overrated, nor that of the free admission of fresh air. The experience of twenty years (of about two hundred carbuncles) gives only four deaths; two of these being from pyæmia. The disease called "carbuncular inflammation of the lip," or "malignant pustule," sometimes, is neither the one nor the other. Carbuncle of the lip has the same course as elsewhere. This is a rapidly fatal affection, occurring in young adults without the history of contagion, met with in the "pustule," and not like the continental reports of it. It is unlike any other disease in England. Of fifteen cases which had come under observation, only one had recovered.

Carbuncle of the face.—Mr. Thomas Smith writes on carbuncular inflammation of the face ('Clin. Soc. Trans.,' iii, p. 63). He notes three fatal cases; discusses the relations between carbuncle and malignant pustule, giving the symptoms at length. As to treatment, after remarking on the general fatality, he says, "It is almost certain, from the effects of similar treatment on malignant pustule, that the complete destruction by caustic potash, in an early stage, of the pimple, boil, or pustule that ushers in this disease, would at once obviate all risks of septicæmia. It is, however, no less certain that by the adoption of this plan a large number of patients would be needlessly subjected to a very painful and permanently disfiguring treatment. Indeed, such practice could not and ought not to be pursued. With regard to the administration of internal remedies, I know of only one that has been found efficacious, and that is quinine, given in such doses as to produce cinchonism, and for this information I am indebted to Mr. Paget,

whose personal experience has given him good results from its use. I would venture to propose that in all cases of facial boil or carbuncle, in addition to the general measures which ordinary prudence would suggest, sulphite of soda or magnesia should be systematically administered from the very first. Though I have had no experience of the effects of this drug as a preventive of the blood-poisoning that may occur from facial carbuncle, yet I believe that I have seen the happiest results from its administration in the early stages of the pyæmia that so often occurs with acute necrosis, and, more rarely, after operations in children."

The cause of danger in facial anthrax.—In an elaborate memoir published in the early numbers of the 'Archives Générales de Médecine' for 1870 M. Reverdin treats fully of boils and carbuncle of the face. In a case where he had an opportunity of making a careful microscopical examination he found all the veins of the face in a state of phlebitis. From this and analogous cases he infers that the danger attending anthrax of the face is due to phlebitis, which may extend to the neck or even further, and be propagated through the ophthalmic vein to the cavernous sinus. In the case observed by M. Reverdin there was suppurative phlebitis of the internal jugular vein, and metastatic abscesses of the lungs and kidney.

Temperature in shock.—Mr. Wagstaffe records the results of a series of observations on the temperature of patients suffering from shock. Very little has been written on this subject. Mr. Fourneaux Jordan has given the lowest temperature which he has met with, in which recovery followed, as a few tenths below 97°. In one case of cut throat Mr. Wagstaffe found a temperature of 91·2°, and yet the patient did well. The cause of the loss of heat was probably loss of blood. In a second case the temperature was 92·4°. In a third 93·5°. Of 47 other non-fatal cases, there was a fall of about 3 or 4 degrees in four cases, of 2 or 3 in three cases, of 1 or 2 in thirteen cases, and in 27 there was only a fall of a degree or less. Of the fatal cases the greatest fall was in a case of fractured spine when, on admission, it was as much as 6°, and in forty-eight hours it had increased to 16·65°. In a second case the fall was 11°. There were five fatal cases with only a fall of less than a degree, these, however, dying after a long interval had elapsed. (The cases of death within forty-eight hours, and due to shock, showed a diminution of temperature—in a case of scald, of 4·5°; of burn, 2·4°; of "fracture" there is none recorded; of "operations," one showed a fall of 8·4°, one of 4°, another of 3·4°; of injury to the head, one 11·0°, one 4·1°, and another 3·2°; of fractured spine, one case only, a fall of 16·65°; of visceral injury, one 5·4°, one 3·4°, one 1·8°, one 1·75°; also the operation cases above-mentioned are included.—Ed.)

Two cases of scalds or burns, fatal in forty-eight hours, had a fall of 4·5° and of 2·4°. Two which recovered had a fall of 0·8°, and elevation of 0·6°. Of the cases of fractures, in one which recovered after amputation for compound fracture of both legs there was a fall of 6°. Nine

others with a slight fall, varying from 2° to ·6°.* Three died with a fall of about 2°, but not for a week or longer. The depression in cases of operations which recovered amounted to tenths of a degree only at the conclusion of the operation. In the fatal ones the lowest fall was 8·5° (ovariotomy). In seven others the fall varied from 4° to 2°.

Four cases of hernia which recovered after operation had a normal temperature. Two others, which had a normal temperature before the operation and a fall of 3° to 4° afterwards, died. In one case, suffering from (hernia) collapse, there was a fall of 1·8°, and death followed. In another fatal case, on admission there was an elevation of temperature of 1·6° (peritonitis).

Of the cases of injury to the head, one recovered after a fall of 4·9°; two fatal (after a long time) showed a normal temperature; one, fatal in nine hours, had a fall of 11°; one, fatal in seven hours, had a fall of 4·1°; one, fatal in thirteen hours, had a fall of 3·2°.

All the cases of fractured spine died, but only one within forty-eight hours; in this case there was a fall of 16·6°. In four others there was a fall of five and of two degrees, and in one none at all.

Of the cases of injury to the abdominal viscera, two recovered after a fall of 3° to 4°. One died in forty-eight hours, with a fall of 5·4°; one in six hours, with a fall of 3·4°; one died in five days, fall 2·4°; one in twenty-four hours, fall of 1·8°; one in six hours, fall of 1·7°. A case of ovariotomy died in twelve hours, the fall after operation being 8·4°. One case of herniotomy died in seventeen hours, after a fall of 4·0°; and another in two days, after a fall of 3·4°. In a case of hæmorrhage from a cancer of the testis, in a boy five years of age, the temperature fell 2·2°, and he died in three days. ('St. Thomas's Hosp. Reports,' 1870, p. 465.)

Cure of snake-bites.—Prof. Halford, of Melbourne, has been very successful in the cure of snake-bites by the injection of ammonia into the veins. In one case a man had become comatose, and was vomiting, the pulse was feeble, and the pupils sluggish. After some time, when he appeared really dying, Dr. Halford injected some ammonia with a fine syringe into the radial vein. The effects were marvellous. In a second case about twelve minims of strong liquor ammoniæ were injected into the saphena vein. A third case was equally successful. The liquor ammoniæ fortior, Dr. Halford says, should be diluted before injection with two or three times its quantity of water, and of this mixture from twenty to thirty minims should be injected into one of the larger veins. The syringe should be carefully introduced. ('Brit. Med. Journ.,' Jan. 30, 1869.)

Rupture of the quadriceps extensor tendon.—Dr. Buchanan records three cases which occurred within twelve months. In two the tendons on both sides gave way at the same time. ('Lancet,' Oct. 29, 1870.)

Statistics of the results of operations.—The results of 175 operations,

* There is another case, in the table of amputations, in which a man, æt. 61, had a fall of 2·6° and recovered after amputation for "smashed leg."—(Ed.)

extending over a period of seventeen years, are given by Mr. Birkett. Dr. Steel gives those of the eight years from 1861-8, embracing 305. ('Guy's Hosp. Rep.,' xv, pp. 562 and 600.) Mr. Hester has published the results of amputations in his practice at the Radcliffe Infirmary, Oxford, in the 'Brit. Med. Journal,' April 3, 1869. The total cases were fifty-two, with six deaths. Statistics of operations in country and hospital practice are given by Sir James Simpson in 'Edin. Med. Journal,' i and ii, 1869, showing the influence of hospitalism. Mr. Teale gives statistics of the relative mortality attending the employment of rectangular and non-rectangular flaps. ('Lancet,' July 16, 1870.)

Prof. Spence read before the Med.-Chir. Soc. of Edin. an account of the statistics of 403 amputations performed by himself. They are tabulated in the 'Edin. Med. Journ.,' Sept. 1870. Mr. Nunneley gives the statistics of the operations performed in the Leeds Infirmary during a period of sixteen years. ('Lancet,' Jan. 29, Feb. 5, and Feb. 12, 1870.)

Dr. Morton publishes the statistics of the Pennsylvania Hospital, as regards operations, for forty years. ('Amer. Journ. Med. Sciences,' Oct. 1870, p. 313.)

Mr. Callender gives statistics of the results of amputations on country patients admitted into St. Bartholomew's Hospital, and shows that the per-centage of deaths is not greater in large town hospitals than in the country. The mortality after all amputations, in country hospitals, he gives as 1 in 5·7, or 17·5 per cent.; of country cases in London, 1 in 5·8, or 17 per cent.; of country private practice, 1 in 5·8, or 17·1 per cent. ('St. Barth. Hosp. Rep.,' v, p. 243-63.) A review of this paper appeared in the 'Brit. Med. Journ.,' July 24, 1869, in which attention was called to the probable fallacy that the "country patients" in St. Bartholomew's were operated on for disease, and not for severe injuries, thus giving a too favorable return in proportion to more severe cases at other hospitals.

Mr. Callender, in the number for Oct. 30, gives the particulars of the cases. He gives the proportion of primary to other amputations as 1 in 7·2 amongst the country cases, and of 1 in 7·4 of primary to other amputations in the gross number. No one of the amputations among country patients appears to have been primary of the thigh.

Hospital efficiency.—A summary of recent statistics and statements on this subject will be found in two able articles in the 'Med.-Chir. Rev.,' April, 1870, p. 441, and July, 1870, p. 54.

Use of the ligature.—Mr. Callender brings forward statistics showing the rarity of secondary hæmorrhage at St. Bartholomew's after the use of the ligature. ('Clin. Soc. Trans.,' iii, p. 111.)

Excision of the wrist.—Five cases of successful excision of the wrist-joint are detailed by Mr. West. Figures of each patient are given and a fac-simile of the handwriting of one of them after operation. ('Dub. Quart. Journal,' Feb. 1870.)

Plastic operation on the urethra.—Sir H. Thompson exhibited to the Clinical Society a patient on whom an operation for the loss of a large portion of the urethra had been successfully performed. The man had been the subject of large extravasation of urine. The resulting sloughing destroyed the skin of the penis and a full inch of the urethra just anterior to the scrotum. A grooved staff having been introduced into the bladder, the urethra was laid open through the perinæum, and a catheter inserted and retained. The margin of the wound was then broadly pared, a large flap dissected from the side of the scrotum, and placed in good apposition upon the raw surfaces, attaching it with silk sutures, and covering in completely the urethral wound. All the urine flowed by the catheter, and in a few days the edges of the wound had united except at one spot. At the end of five weeks the urine was allowed to pass along its proper channel, and the perineal wound soon healed. A No. 8 catheter was passed occasionally. When exhibited there remained only a small orifice, which might be closed by galvanic cautery or another plastic operation. Stress was laid on the importance of allowing an exit for the urine and on the breadth of surface laid bare (Mr. Heath). ('Lancet,' Dec. 17, 1870.)

Use of chloroform in the cure of cleft palate.—Mr. Thomas Smith records further cases in which he has operated on young patients for cleft palate with the aid of chloroform. ('Lancet,' Aug. 14, 1869.)

Mr. Lawson Tait writes on the treatment of cleft palate in the 'Med.-Chir. Rev.,' July, 1870, 281. Figures of modified instruments are given. He operates in infancy with the patients under chloroform, and without dividing any muscles, as he thinks this leads to atrophy of the flaps, &c.

Mr. Marsh records the case of a child sixteen months old, on whom he operated successfully for the cure of a fissure of the whole of the soft palate and one fifth of the hard. He adopted Mr. T. Smith's plan. ('Clin. Soc. Trans.,' iii, 15.)

Cancer of the lip.—In the removal of cancerous growths affecting the angle of the mouth, Mr. Annandale thinks the V-shaped incision inadequate, and recommends that an incision should first be carried from the upper edge of the angle of the affected side into the cheek in a direction very slightly upwards, so as to allow a flap including the disease to be turned over and carefully examined. The extent and connections of the disease being thus accurately determined, the requisite amount of tissue can be removed either by a V-shaped or square incision. If the disease has spread to the gums or periosteum of the jaw, these structures can be thoroughly examined, and the affected portion of the jaw or its alveolar margin, including the gums and teeth, taken away by means of the same incision. This plan allows (1) the extent of the disease to be more accurately determined, and (2) it forms a part of any of the plastic operations employed for the restoration of the lower lip. In cases of cancerous tumours a flap of healthy skin, and the tumour may be turned down first and carefully examined before the growth is cut off. ('Edin. Med. Journ.,' Aug. 1870.)

A winged catheter.—For retention in the bladder Mr. Holt has devised an india-rubber catheter with "wings" near the extremity of the catheter. When the catheter is being passed along the urethra the wings lie close to its side. When fully introduced they expand and prevent the instrument from easily slipping out. They will not prevent the attempt of the surgeon to pull the catheter out, as they then double back. ('Lancet,' Feb. 19, 1870.) Mr. Barnard Holt gives a further account of his catheter, mentioning some improvements (May 14, 1870).

A modified catheter.—Dr. Gourley "in obstinate cases of stricture" uses a whalebone "guide" of very small size, the point being made spiral by immersion in hot and then cold water. If the guide passes into a false passage others are passed on, by its side, till the passage is filled up and one, at last, passes into the bladder. Then a catheter, properly constructed, passes, along the "guide," into the bladder. ('Lancet,' June 19, 1870.)

A retentive catheter.—Dr. Richard Davy has exhibited to the Medical Society of London a catheter easy of introduction, of retention, and of withdrawal. It consists of a French vulcanite catheter, through which a string is passed, emerging at a clean hole, an inch and a half from the point, and then, bridging over the usual opening for the urine, is inserted securely at the point. The opening for the urine is on the opposite side. The handle consists of a leathern collar with a slot in it. There is a knot on this end of the string, and a plug on it. The catheter is introduced on a stilette, fixed by pulling the string and fastening it at the distal end of the catheter behind the slot; the plug may be used or not, and withdrawn after unfastening the string. Its action is analogous to that of a finger, the string being the flexor tendon, and the elasticity of the catheter that of the extensor. The terminal portion of the catheter, three fourths of an inch, is reduplicated. ('Lancet,' April 9, 1870.)

Extra-capsular fracture of the neck of the femur.—Dr. Ogston discusses the mode by which these fractures are brought about, the conditions met with afterwards, and the causes of displacement. Figures are given of specimens. ('Med. Times and Gazette,' May 15, 1869.)

Arterial thrombosis.—Mr. Batho records the case of a soldier, æt. 27, a pale, thin man, of general, good character and temperate habits. He had been admitted into hospital several times for syphilis, but he had not had any serious or acute disease. His left leg became gangrenous, and no pulsation could be felt in the anterior or posterior tibial arteries, whilst the common and superficial femoral arteries could easily be felt to beat. Amputation of the thigh was performed, and it was noticed that the popliteal artery was partially occluded by thrombosis. Mr. Batho remarked that the man's symptoms, when first seen, differed in no perceptible respect from those of common continued fever, and his disease was in consequence returned as such. Thrombosis was diagnosed twelve days later, and the subsequent progress of the case veri-

fied this opinion. It was not thought that the symptoms depended on an embolism of the artery, for there was no heart disease, but that a local stasis of the blood had occurred in the vessels of the leg, dependent, in part, on a most feeble heart-action, and partly on an abnormal condition of the blood itself. Both lower extremities were for a time in a condition analogous to that of frost-bite, but, from some cause which is not apparent, the right limb recovered. In the left limb there was also a nodulated condition of the lymphatics of the calf, such as is met with in frost-bite. That such a train of symptoms should have occurred in a semi-tropical climate (Cape of Good Hope), and in a very hot season, is remarkable. It is obvious that exposure to cold could have had no part in their causation. The man recovered well and completely after the operation. ('Lancet,' vol. i, 1870.)

Sebaceous tumours of the cranial region.—Mr. Prescott Hewitt writes on this subject in the 'St. George's Hosp. Rep.,' iv, p. 91. They are the most common of all the various tumours of the cranial region. One kind, the dermoid, are found with few exceptions in the neighbourhood of the orbit, and frequently at one particular spot, the outer part of the brow, close to the external angular process of the frontal bone. The hardness often met with in these tumours is dependent on their being cram-full, not on the nature of the cyst or its contents. It may be taken for granted that a small, hard, movable tumour on the outer side of the brow of a young child is one of these sebaceous cysts. They are frequently seated under the orbicularis, and connected with the periosteum. In the great majority of cases the sebaceous tumours are of a different character; no traces of skin structure can be found. In some of these it is difficult to distinguish between the cyst-wall and the contents. "The now common expression of 'thick-walled cyst' is, I believe, an erroneous one. That which is supposed to represent the wall of a thick cyst is, properly speaking, not the cyst itself, but simply a part of its contents. A careful examination proves that the whole appearance is dependent on the disposition of the contents of the cyst; the inner layers are soft and pappy, but the outer ones, made up of flattened epithelial scales, condensed and closely packed in layers, look like a tough fibrous tissue, which, being more or less intimately connected with the cyst, has been described as part of it." Cases are narrated of pitting and perforation of the bone by these tumours. "It is curious to observe how very frequently the sebaceous tumours which have perforated the skull have been lying at one and the same spot. In four, out of the five cases mentioned above, the perforation corresponded to the upper and middle part of the frontal bone, close to the sagittal suture; and in two other cases, in which the absorption of bone was extensive, the tumour was precisely at the same spot." When these growths ulcerate and fungate they may resemble cancerous tumours. The tumours met with about the brow are generally single, whereas in the hairy scalp they are mostly multiple. Not only so, but they occur in several members of the same family, and that for generations together. The brother, sister, mother and grandfather of one lady, who had twenty-three sebaceous tumours, were each of them afflicted with a

large number of these tumours. The hereditariness is sometimes confined altogether to the female line. The mother and aunts and grandmother of one lady had been affected. In one family all the females, for three or four successive generations, had had these tumours, but all the males had escaped. Removal is the only treatment. There is no little anxiety attendant on such operations, for erysipelas and pyæmia are not by any means infrequent events.

Subglossitis.—Mr. Carsten Holthouse notes a case of subglossitis. The patient, a man, æt. 31, was profusely salivated, but there was no fœtor of the breath. The tongue formed a hard, solid lump, and was perfectly immovable. The whole of the subglossic region was affected with a sort of solid œdema, which formed another tumour in front and below the tongue. A white fur or exudation covered the dental margin of the gums for a breadth of about three lines, both of the upper and lower jaw. The soft palate and back of the pharynx were quite free. He had noticed, while at dinner the previous day, that his tongue became stiff and large. No cause could be assigned. An incision was made into the submucous tissue without benefit. Chlorate of potash gargle was tried without avail. On the fourth day a poultice was applied to the throat, a borax gargle ordered, and quinine given internally. A rapid improvement followed. The subglossal swelling distinguished this case from one of glossitis. There was no tenderness, &c., of the salivary glands. ('Clin. Soc. Trans,' ii, 140.)

Ichthyosis and epithelioma glossæ.—Mr. Hulke has communicated to the Clinical Society the particulars of a case in which extreme hypertrophy of the epithelial and papillary elements of the mucosa of the tongue was followed, after twenty years, by epithelioma. The patient, an athletic fireman, æt. 43, came under his care first in 1861 with the following curious condition of the tongue:—"Upon the middle of its upper surface there was an oblong, yellowish-white, leathery patch, about $1\frac{1}{2}'''$ thick at its centre, but thinner towards the left side of the tongue, where it was not unlike the thinnest kid leather. A little behind the left corner of this patch was a more prominent, round spot, of the same kind, about $\frac{1}{2}'''$ broad. These patches were accurately circumscribed; the underlying muscular tissue was not indurated, and no enlarged glands were perceptible. He said that, twelve or fourteen years before, the skin on the back of his tongue began to thicken, and a raised patch was formed here which slowly grew thicker and larger, until it became so very inconvenient that he pared it down with a razor, and he had since repeated this, from time to time, whenever the patch became troublesome by its bulk and its inflexibility. He denied syphilis, and no traces of it could be found. The smaller patch was cut off, and the wound healed quickly. A memorandum, made at the time, is to the effect that "the wart is $\frac{3}{4}'''$ thick at the centre and $1\frac{1}{2}'''$ at the edge. It consists of the natural elements of the mucous membrane greatly hypertrophied. The papillæ and their epithelial sheaths are both involved." Three years later he was seen again. The disease had spread, but not altered materially in character. Portions, on two

occasions, were removed, and the disease almost disappeared. Three and a half years later he returned. This time he had a ragged ulcer, with a raised margin and a thickened base, on the dorsum of the tongue, near the tip. Its surface was foul and ichorous, and it was excessively painful. There was no recurrence of the hypertrophy of the mucous membrane. The present disease was manifestly an ulcerated epithelioma. It was removed with the écraseur successfully; but a month later a very hard lymphatic gland, of the size of a bean, was found at the angle of the jaw on the left side. This was followed by steady involvment of the glands of both sides of the neck and of the floor of the mouth. At the end of six months death was evidently very near. The affection of the tongue, to which the name ichthyosis was provisionally given, "consists essentially in hypertrophy of the epithelial and papillary elements of the glossal, mucous membrane, corresponding to that which in the skin dermatologists have long known by the same name. Its rarity may be inferred from the fact that, during the twelve years I have had charge of a large out-patient practice at two considerable metropolitan hospitals, I had only seen this one case till a few days ago, when Mr. Moore drew my attention to a patient of his similarly affected with both ichthyosis and epithelioma of the tongue, the former of many years' duration, the latter of recent date. Ichthyosis is characterised by tough, white, raised patches on the surface of the tongue. Their colour is not unlike that of a thin film of boiled white of egg or wet kid leather; they are clinically distinguishable from syphilitic condylomata by their thick epithelium and their wide, superficial extent, and from syphilitic nodes and cancerous tumours by their restriction to the mucosa, by their exact circumscription, by the natural softness of the underlying muscular tissue (showing the absence of infiltration), and by the absence of ulceration and of infection of the lymphatics. The patient not being under our observation at the time when he first noticed the cancerous knot, we cannot prove or disprove its origin in any vestige of an ichthyosis patch. The long duration of the ichthyosis as such, the complete restriction of the hypertrophy to the elementary tissues of the mucosa during twenty years, and the evident retrogression of the remaining vestige of it in 1864, favour the idea that the two conditions occurred independently, and this is supported by the anatomical relations of the cancerous tumour, which, in a longitudinal section of the tongue in the median plane, appears, to the naked eye, as a round nodule imbedded in the muscular tissue, the coarser fasciculi of which are disposed concentrically around it. On the other hand, the final supervention of epithelioma in the only two cases which I have seen, and the anatomical parallelism presented by the very active multiplication of cells of an epithelial type in both diseases, are not without significance." ('Clin. Soc. Trans.,' ii, 1.)

Mr. Paget relates a case in which ichthyosis of the tongue, of twelve months' duration was followed by cancer, which developed in a month after the patient was first seen. There was hereditary tendency to cancer in the family of the patient, a lady, æt. 42, for her father died, at sixty-two, with cancer of the liver, and his sister, at forty-six, with cancer of the uterus. ('Clin. Soc. Trans.,' iii, 88.)

Syphilis.—In the sixth volume of the 'St. Bartholomew's Hospital Reports,' p. 7, Mr. Savory writes on "The Unity or Duality of Syphilitic Poison." The "Committee on Venereal Disease" declared for the unity or singleness of the poison of syphilis, but then they refuse the term syphilitic to any poison which exhausts itself in local action. The term is limited to constitutional infection. "Why must the poison itself be different because sometimes it does and sometimes it does not infect the whole system? Is it clear that there is nothing whatever extraneous to the poison itself which determines or influences the intensity and extent of its action? Is such variety of effect of one and the same poison opposed to all analogy?" He thinks it is begging the whole question to assert that the term syphilis cannot be applied to mere local affections. He admits, with Hutchinson ('System of Medicine,' i, p. 288, *note*), that but one poison can produce the constitutional phenomena, but he asks whether the same poison always produces constitutional symptoms. "Does it not sometimes expend itself in an action which is simply local?" "If, as most surgeons believe, certain of these sores owe their origin to a specific poison, then in what relation does this stand to that of constitutional syphilis? The two chief forms of sore are not always well defined and distinct. It not only often happens that they cannot be distinguished even by the best observers, but there is also much evidence to show that each may reproduce or pass into the other. Such facts cannot be reconciled with the doctrine that the two forms of sore owe their origin to distinct poisons. But it does not follow that all the differences observed in the characters of the sores and their consequences must be due to extraneous circumstances, to the conditions under which the poison operates. There is another explanation, which I venture to think is most in harmony with all the facts in evidence. The same poison may at different periods and under different conditions vary in energy, even to produce striking differences in its obvious mode of action. Such difference is seen in the case of other poisons, both animal and vegetable. The venom of serpents, as of the common viper, varies widely in virulence according to the vigour of the animal; and every botanist knows how important it is for therapeutical purposes to gather particular parts of plants at certain seasons of the year. So the venereal poison, according to the kind of soil in which it is produced, or the influences to which it is exposed, may be, and probably is, much more active at some times than at others." He endorses Mr. Hutchinson's belief (evidence before Committee) that the soft sore results from a poison which has been modified; that there are two varieties of pus, differing from each other, but that they were originally from the same sore and only temporarily distinct. This view is supported by the analogy of other morbid poisons; for example, that introduced by dissection wounds, which, at one time, produces only local affections, at others, blood infection. Glanders and farcy probably result from one and the same poison, yet they will appear as distinct diseases in what may be called their typical forms, presenting no features of even remote resemblance. The more thoroughly the nature of syphilis is investigated the closer does the analogy appear to be between it and other

specific diseases (as scarlatina, &c.), pointed out by Hutchinson very clearly in his article in 'System of Medicine.' Supposing syphilis to be a gradually elaborated result of sexual intercourse, and to be continually arising where such conditions prevail, one would expect intermediate forms to be met with (between simple urethritis and an indurated chancre), and it is asked, do we not often meet with them, far oftener than we believe, but under the prejudice of a foregone conclusion ignore their real significance and force them into one or other of our classes?

"Is due weight given to the bearing of the following facts? Purulent discharge from the urethra is sometimes the result of intercourse where there is no evidence or suspicion of previous gonorrhœa, where there is nothing beyond leucorrhœa, or not even that. Nay, such discharges sometimes arise, as it is said, spontaneously, or, at all events, apart from any intercourse. They may and do present all degrees of activity, from mere gleet up to an attack having all the characters of acute gonorrhœa. Gonorrhœa, where there is no evidence whatever of any form of sore, is occasionally followed by constitutional effects—effects such as rash, which may not be distinguishable from those of syphilis. Sores of various forms and degrees often occur on the glans and elsewhere in the course of gonorrhœa. The occurrence of sores, the result of intercourse, which present no features beyond those of ordinary sores, which may occur upon any part, and which heal without further mischief in the same way. The amount of evidence which exists to show that sores which cannot be distinguished from what is known as the soft suppurating venereal sore, may be contracted from a person in which the most careful scrutiny fails to detect the existence of a sore of any kind whatever. The frequent occurrence of sores of such mixed or doubtful characters that it is impracticable to determine whether they are, or are not, 'specific.' The very different forms presented by both soft and hard 'specific' sores, especially the different degrees of suppuration and induration, and the not infrequent occurrence of sores which may fairly be termed intermediate, or, to say the least, the nature and result of which cannot be determined from the characters they exhibit; the widely varying degrees which the constitutional effects exhibit, especially in regard to the period at which they occur, the time they last, and the extent to which they are developed." The distinction between unity and duality is of great practical importance in prognosis; affects our views of the origin of syphilis. "The notion of a poison still continuing after so many years, sharply defined in its operation, and, therefore, it may be assumed, in its nature, must be very different, in the suggestions to which it gives rise, to the idea of a poison in its worse form of intense violence, but passing insensibly through milder forms until it loses its distinctive features. Yet, further, surely here is the key, if only we could turn it, which would unlock some of the first truths of physiology. The question of the unity or duality of the poison of syphilis has a most important and direct bearing on the relation which many diseases hold to each other, the degree to which each is defined, and the fixity and permanence of what are known as specific differences.

Retro-peritoneal hernia.—Dr. Pye-Smith, in the 'Guy's Hospital Reports,' xvi, p. 131, describes two cases of internal hernia of the form described by Prof. Treitz. "As the inferior mesenteric artery comes off from the aorta it is directed downwards and to the left, crossing obliquely the vein of the same name, which runs upwards and inwards, in a posterior plane, to join the superior mesenteric and splenic veins. Hence these two inferior mesenteric vessels, with the left colic branch of the artery and abdominal aorta, enclose a more or less oval space to the left of the lumbar spine, very plainly seen when the arteries are injected and the portal system full. This is just the place where the transverse part of the duodenum comes forward from its position across the spine, and ends by making the first free convolution of the small intestine—the duodenal-jejunal flexure. The peritoneum, which before bound the gut tightly down to the back of the abdomen, is now suddenly stretched, as it were, to form the upper part of the mesentery, and here there is very frequently to be found a semilunar fold or edge of peritoneum, with its concavity looking upwards or inwards (*i. e.* to the right). This fold is continuous, on its inner side, with the peritoneum covering the transverse duodenum, and forming the inferior layer of the transverse mesocolon, below, with that overspreading the inferior mesenteric and left colic arteries (which run a little below the edge of the fold), and, on the outer side, with the descending mesocolon. The slight fossa which this fold makes may be of considerable depth, running down as a pouch of peritoneum behind the fold and the inferior mesenteric artery, with the aorta and spine to the right, the descending colon and kidney to the left, while its orifice of communication with the general peritoneal cavity corresponds with the more or less oval space above described, and its upper and outer edge covers the inferior mesenteric vein. The relation of the parts can readily be seen in any subject where adhesions have not occurred, by throwing up the omentum and transverse colon and drawing the whole of the jejunum and ileum over to the right. The space described is then at once recognised, and if there be no fossa, nor even a distinct fold of peritoneum, it is easy to make one, by pushing the smooth, parietal peritoneum, covering the oval space, downwards behind the inferior mesenteric artery."

The first, free convolution of the small intestine is very liable to pressure from within, which may produce or increase the hollow so as, at last, to produce a hernial protrusion, which may be described as "retro-peritoneal." Various cases are detailed, and one in which Mr. Hilton operated by a vertical, abdominal incision for internal strangulation, and met with a condition probably resembling the above. "The acute symptoms of strangulation would probably occur with a small rupture;" and "the earliest and most marked seat of fulness and of tenderness will be over the seat of obstruction." "This spot is in the lower part of the epigastric region, somewhat to the left of the median line, two inches above and a little outside the umbilicus." "If, then, a fixed and tender swelling were found, at the spot thus indicated, in a case of probable strangulation of the small intestine high up, and especially if similar attacks had preceded, we might form a tolerably safe diagnosis of this form of internal hernia. Beyond placing the patient

on the right side, with the pelvis raised, so as to favour spontaneous reduction of the ruptured bowel by its own weight, the only special line of treatment apparently open would be by operation." The exact seat of obstruction being probably ascertained, and its cause a mechanical one, would indicate the propriety of surgical interference, and the success with which Mr. Hilton relieved the strangulation, when its peculiar, anatomical conditions had not yet been recognised, furnishes the best encouragement for a similar plan of treatment. Two other forms are described. A diagrammatic figure is given.

Treatment of subclavian aneurism.—Mr. Poland passes on to consider this subject, in the sixteenth volume of the 'Guy's Hospital Reports,' pp. 1 to 130. The cases summarised at p. 278 of this 'Retrospect' are given in detail. On looking at the column of results, he says, most unsatisfactory terminations will be found, yet he thinks that the plan of leaving the cases without treatment, at all, unjustifiable. We must not, because several cases of spontaneous cure have most fortunately taken place, much to the surprise of the surgeon, expect a like result in others. Respecting "medical" or "general" treatment, he remarks that in only two of thirteen reported cases was the "Valsalva plan" carried out; of these, one recovered and one died. "These cases offer good examples of this treacherous mode of treatment." "There can be no doubt, as some writers state, that a moderate discriminating use of this powerful means may be of benefit in strong, healthy, robust persons, but would, of course, be strongly contra-indicated in the feeble, unhealthy, and anæmic. Its beneficial effects in arresting hæmorrhage from the lung in hæmoptysis, by causing blood coagulation and plugging of the vessel, tend to give some weight to the arguments in favour of its adoption for the cure of aneurism." Digitalis has been freely employed, but without any specific or material effect in the cure of subclavian cases. The same remark applies to antimony. Aconite was used in two cases, in one, without effect, but, in the other, it was taken accidentally in a poisonous dose, causing alarming syncope and prostration, but was followed by coagulation of the contents of the sac and a perfect cure. Refrigerants and ice have been advantageously employed. Direct compression of the tumour, used with very great moderation, he considers a remedy of the highest importance for consideration. The dangers of "manipulation" are specified (p. 46). We have only one instance of cure by means of galvano-puncture. The dangers are primary or secondary hæmorrhage and cauterization of the skin, followed by sloughing. Lefort's rules for the employment of this treatment are given. Nine cases of recovery after ligature of the third part of the subclavian are tabulated (p. 76). Two of the patients were females, and seven were males. In six out of the nine the aneurism was on the left side (p. 86). In three the aneurism was entirely of a local character, independent of general, arterial disease, and was truly subclavian. The ligature was applied very near to the sac, and the patients recovered without a bad symptom. The twelve patients who died after ligature were all males (p. 114). The aneurisms were subclavio-axillary, eight being on the right side and three on the left. In one

the side was not stated. No difficulty during the operation was met with in four of the cases. In two cases, division of the external jugular vein was found necessary, and both the ends were tied without any subsequent ill effects. In one, only, was the scalenus muscle partially divided. In three cases there was much difficulty, owing to induration around the vessel. In one case the artery required to be tied in two places. In one the sac was punctured; possibly, also, in a second. Hæmorrhage was the cause of death in eight cases. "There are only five cases, out of the whole number of twenty-one cases of ligature of the third or second portion of the subclavian artery, for subclavio-axillary aneurism, in which the application of the ligature was the actual cause of death." "Respecting the success or fatality of the operation, as far as the published statistics are concerned, we cannot arrive at any satisfactory conclusion." Hitherto all kinds of cases have been grouped together, and deaths have been included not in any way connected with the operation. Some remarks are made on the accidents occurring during the operation, the immediate and consecutive effects of ligature, and the occurrence of hæmorrhage. With regard to ligature between the scalene muscles, Mr. Poland states that the recorded cases fully prove its practicability, without injury to the phrenic nerve or want of plug at the seat of ligature. The "statistical report" will be concluded in the next volume.

Atheroma of arteries.—Dr. Moxon passes in review the different published opinions as to the nature of atheroma, and then states his belief that mechanical strain is the main cause of atheroma of arteries. (1) The male sex shows greater liability than the female, and men are accustomed to more laborious work. It is, I think, true also that when women are the subjects of atheroma they have been used to an unusual amount of such work. (2) Whether this be true as among females or not, it is certain that the portion of the male population who evidence the greatest amount of atheroma are those who use the greatest muscular exertion, *e.g.* sawyers, oarsmen, soldiers, persons accustomed to excessive, athletic exercises, &c. (3) Those diseases that diminish the volume of blood, and the consequent pressure within the arteries, prevent, almost entirely, the occurrence of atheroma of the arteries, *e.g.* phthisis, mitral obstruction, &c. (4) The pulmonary system of vessels escapes the liability to atheroma almost entirely. Against the theory, that the difference between venous and arterial blood accounts for this, is the fact that when the right heart is greatly hypertrophied, from chronic bronchitis or mitral disease, the pulmonary artery then gets commonly affected, although its blood is more venous than usual. (5) The earliest appearances of disease occur at points where the strain upon the coats is greatest. The peculiar liability of the cerebral, splenic, and cardiac arteries to atheroma may be explained by the mechanical tension under which the circulation takes place. The peculiarities of this circulation are discussed. (6) The arteries of the lower extremities are more liable than those of the upper to atheroma. (7) The appearance of the interior of the aorta in the early stages of atheroma supports the evidence that the occurrence of it is due to

tension within the vessel. The atheroma forms lines lengthwise to the vessel's course; that is, across its transverse girth. Now, the longitudinal tension in the vessel's wall is not so great as the transverse, which is continuous, while the longitudinal is transient. The transverse strain tends to tear longitudinal rents, and, though this does not occur, yet irritation and weakness are produced. The author considers that he has substantiated the following points:—(1) That what is called atheroma of arteries is sub-inflammation of various degrees, of which the lower degrees end in fatty degeneration of the coats, along with the inflammatory products; and (2) that the determining cause of the occurrence of this change is mechanical strain. This by no means interferes with any belief that a general altered nutrition—in gout, syphilis, &c.—may lay the coats of vessels more open to suffer from the said strain. In a case from which a specimen was obtained, which is figured, the patient had had syphilis some years before. ('Guy's Hosp. Rep.,' xvi, p. 431.)

Perforations of the membrana tympani.—Having found other plans of treatment inefficacious, Mr. Hinton adopts the following:—"Having ascertained that the Eustachian tube is pervious, or, if it be not, having rendered it so by the appropriate means, if possible, and having first thoroughly cleansed the ear by syringing, during and after a free passage of air through the tube, I fill with a warm solution of bicarbonate of soda (℥j ad ℥j) a syringe, the nozzle of which is made large enough to close the orifice of the meatus, and is well guarded with india rubber, and with a moderate but continued pressure seek to pass the fluid through the perforation and the Eustachian tube. The head being slightly bent forwards, and the patient being told that he must breathe through the mouth, the fluid escapes through the nostrils without inconvenience." "By this means, in certainly the great majority of cases, either immediately, or after a few repetitions, large quantities of evidently old and more or less dense mucus are removed." Mr. Hinton believes that accumulation of mucus is a common occurrence in these cases; he often removes large quantities repeatedly, and considers such removal an important, curative means. He repeats the washing-out two or three times a week. When it appears that the mucus is approaching complete removal, five or ten grains of chlorate of potash are added to the ounce of the solution; and when the removal appears complete, some astringent is substituted. ('Guy's Hosp. Rep.,' xvi, p. 241.)

REPORT

ON

OPHTHALMIC MEDICINE AND SURGERY.

BY

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THE years 1869 and 1870 have not been very fruitful of either facts or writings in ophthalmology, and indeed leave it very much where they found it in respect both of science and practice. They are marked, however, by one melancholy distinction, due to the hand of death. Professors van Roosbroeck, Quadri, and Böhm, Drs. van Biervliet and Serre (d'Uzes), and, last and greatest of all, the illustrious Albrecht v. Graefe, have ceased from their labours. Their eulogies have already been pronounced, and it is only necessary here to chronicle their deaths as events in history.

In England the treatise of Mr. Soelberg Wells* has reached a second edition. Mr. Lawson has published a small book† on ophthalmic medicine and surgery; and Mr. Dixon has revised, for the second edition of the work of which it forms part, his article on diseases of the eye, contributed to 'Holmes's System of Surgery.' Mr. Wharton Jones has published on the effects of accidents upon vision.‡ I have myself translated the "Augenfehler" of Dr. Scheffler,§ and have written the chapter on affections of the eye in the last edition of Dr. Tanner's work on the 'Diseases of Infancy and Childhood.'‖ A new edition of Dr. Liebreich's 'Atlas of Ophthalmoscopy' has been published simultaneously in England, France, Spain, Germany, and Italy, the edition in each country having its text in the corresponding language. Two numbers of the 'Ophthalmic Hospital Reports' appeared in 1869, and a small number of contributions to ophthalmology have been published in the general medical journals.

From America, in the spring of 1869, we received the first number

* 'A Treatise on Diseases of the Eye,' 1870.

† 'Diseases and Injuries of the Eye, their Medical and Surgical Treatment,' London, 1869.

‡ 'Failure of Sight from Railway and other Accidents,' London, 1869.

§ 'The Theory of Ocular Defects, and of Spectacles,' London, 1869.

‖ Edited by Dr. Meadows, London, 1870.

of a half-yearly journal of 'Ophthalmology and Otology,'* which was to appear simultaneously in the English and the German languages, edited in New York by Professor Knapp, and in Heidelberg by Professor Moos, but of which only this first number has as yet reached England. The "Practical Guide" of Dr. Williams† has reached a third edition; a tiny treatise ‡ has been put forth by Dr. A. Salomons; and Professor Knapp's book on intra-ocular tumours§ has been translated by Dr. Cole, of Chicago.

In Germany, E. von Jäger has written on the ophthalmoscope || and on ocular pathology;¶ Mooren, on sympathetic ophthalmia;** Hirschberg, on retinal cancer;†† and Schelske, a small treatise on ophthalmic diseases generally.‡‡ The 'Archiv für Ophthalmologie' will be continued by Arlt and Donders, and Zehender's 'Klinische Monatsblätter' appear as usual.

In France, Dr. Meyer§§ has published his lectures on refraction and accommodation, and Dr. Maurice Perrin ||| has written on the ophthalmoscope and on optometry. Galezowski has published the first part of a systematic treatise,¶¶ Dr. A. Sichel*** has translated v. Graefe's "Essay on Paralysis of the Ocular Muscles;" and Dr. Wecker has prepared an original French text to be issued with the plates of Jaeger's "Hand Atlas." The appearance of this work has, however, been arrested for a time by the war. In Belgium the 'Annales d'Oculistique' have been published regularly.

Besides the works above enumerated, a few pamphlets, theses, and the like, have also been published, and to some of these reference will be made.

(*a*) *Anatomy and Physiology.*

The chief contributor to an increased knowledge of the normal and pathological anatomy of the eyeball has been Iwanoff,††† who has written at great length on the anatomy of the iris and its attachment, on the ciliary body, on detachment of the vitreous body, on glioma retinæ, on œdema of the retina, and on the ciliary muscle. In the first of these articles he was assisted by Rollett. As regards physiology, the work done has chiefly fallen within the domain of physiological optics, and affords little matter of general interest. Dr. Pope, of New

* 'Archives of Ophthalmology and Otology,' New York, 1869.
† 'A Practical Guide to the Study of the Diseases of the Eye,' Boston, 1870.
‡ 'Handbook of the Diseases of the Eye, their Pathology and Treatment,' Boston, 1870.
§ 'A Treatise on Intraocular Tumours,' &c. By H. Knapp, M.D., New York, 1869.
|| 'Ophthalmoskopischer Hand-Atlas,' Wien, 1869.
¶ 'Beiträge zur Pathologie des Auges,' Wien, 1869.
** 'Ueber sympatische Gesichtsstörungen,' Düsseldorf, 1869.
†† 'Der Markschwamm der Netzhaut,' Berlin, 1869.
‡‡ 'Lehrbuch der Augenheilkunde,' Berlin, 1870.
§§ 'Leçons sur la Refraction et l'Accommodation,' Paris, 1869.
||| 'Traité pratique d'Ophthalmoscopie et d'Optométrie,' Paris, 1869.
¶¶ 'Traité des Maladies des Yeux,' 8vo, Paris, 1870.
*** 'Des Paralysies des Muscles moteurs de l'Œil,' Paris, 1870.
††† 'Arch. f. Ophth.,' xv, Abth. 1, 2, and 3.

Orleans,* describes how the circulation of the blood may be rendered entoptically visible. He closes one eye, and looks with the other through dark blue glass at a brightly illuminated surface, or a bright sky, and he then perceives certain white luminous currents and discs, apparently situated in different planes, which he ascribes to the motions of blood streams and corpuscles. I have not been able to verify these appearances by personal observation.

Dr. H. Knapp,† while the anatomical studies of Schwalbe and Schmidt have shown us that exudation may travel along the intervaginal space of the double sheath of the optic nerve from the arachnoid to the lamina cribrosa, makes a further suggestion as to its progress into the interior of the eye. He thinks it percolates through the lamina cribrosa and spreads out into and around the head of the nerve. Finding extreme neuro-retinitis in two cases of brain disease, with very little damage to sight, he measured the size of Mariotte's blind spot, and found it increased in one patient two and a half times, in the other four times its proper size. To quote the words of the article:

"This enlargement of Mariotte's blind spot can, to my mind, only be explained thus:—The exudation—fluid and white blood-corpuscles—travels from the arachnoidal cavity into the intervaginal space, oozes through the periphery of the lamina cribrosa, and expands into the soft tissues around the margin of the optic disc, the supra-choroid, choroid proper, and retina. The optic nerve-fibres of the latter, situated further from the origin of the exudation, will be attacked least and last. The rods and staves, however, the percipient layer of the retina, will be affected sooner, and have their function either destroyed or, in case of recovery, kept in abeyance. The enlargement of Mariotte's blind spot, which I found to correspond to the extent of the exudation visible with the ophthalmoscope, proves this conclusively. In addition I may strengthen this theory by the following facts. The rods and staves are delicate organs, and more easily destroyed than the nervous fibres. The exudation, seen through the ophthalmoscope, has its summit at the margin of the optic disc. Extending in both directions, between the fibres of the optic nerve entrance and into the choroid and retina, the most destructible parts it meets on its way are the rods and staves, the nutrition of which, moreover, is dependent rather on the choroid than on the retina. If the exudation passed through the optic nerve itself there would be, in consequence of a like pressure on *all* the nervous fibres, an equal diminution of visual acuteness over the whole field of vision. The anatomical study of specimens alone can fully explain this process. But since this has not yet been done, and specimens are exceedingly difficult to obtain, I thought it well to present my views on this subject before the members of this society, thereby calling their attention to it, in order that no opportunity may be lost, both with regard to the clinical observation and the anatomical investigation of neuro-retinitis."

Dr. Laqueur‡ has studied the occurrence of sudden changes in

* 'Archives of Ophthalmology and Otology.' No. 1.
† 'Trans. Am. Oph. Soc.,' 1870, pp. 118—120.
‡ 'Annales d'Oculistique,' 1869, i, p. 205.

the refraction of the eyes. He formulates the following conclusions:—

(1) A sudden diminution of refraction is sometimes produced simultaneously with diphtheritic paralysis of accommodation.

(2) It probably occurs also in some cases of simple paralysis (uncomplicated by mydriasis) of accommodation.

(3) The refraction diminishes in exophthalmos produced by orbital tumours of rapid development.

(4) The refraction increases in sub-acute attacks of glaucoma.

(5) It sometimes increases rapidly during convalescence from severe disease.

(6) Many myopes are able to diminish their refraction by partial closure of the eyelids.

Dr. Giraud-Teulon* has published an elaborate paper on the effect of astigmatism upon the inverted ophthalmoscopic image. He finds that in an emmetropic eye with its accommodation paralysed, whatever the distance of the convex lens from the eye, the inverted image of the disc is always of the same shape and of the same apparent magnitude. In an eye that is simply ametropic (myopic or hypermetropic), the image of the disc increases or diminishes with the distance of the lens, but retains always the same outline, circular if the disc is circular, oval if it is oval. In an astigmatic eye, increasing distance of the lens changes not only the apparent size, but also the shape of the image of the disc. It will appear oval when the lens is close to the eye; circular when the lens is at its own focal length from the eye; and oval, with its major axis in a direction at right angles to the first, when the distance of the lens exceeds its focal length. It is, therefore, easy to determine the existence of astigmatism, and the direction of the chief meridians (which will correspond with the axes of the apparent ellipse), by simply moving the inverting lens from a point near the cornea towards the spectator. Dr. Giraud-Teulon gives also formulæ for determining, by this method, the degree of refraction in each meridian.

Dr. G. Hay† has gone over nearly the same ground independently.

Dr. Schirmer, of Greifswald‡ gives, as a contribution to the history of astigmatism and hypermetropia, an interesting account of the works of Sachs§ and of Purkinje,‖ both of which appear to have escaped the notice of recent writers. The same author¶ has studied the accommodation as influenced by raised or depressed positions of the eye, and finds that the whole range of accommodation is somewhat nearer the eyes when they are cast down than when they are raised.

Dr. William Thompson has published two papers** relating to the

* 'Annales d'Oculistique,' 1869, ii, p. 93.

† 'Trans. Am. Ophth. Soc.,' 1870.

‡ 'Annales d'Oculistique,' 1869, ii, p. 201.

§ 'Historia Naturalis duorum Leucœthiopum auctoris ipsius et Sororis ejus,' Solisbaci, 1812, pp. 118.

‖ 'Beobachtungen und Versuche zur Physiologie der Sinne,' Berlin, 1825.

¶ 'Klinische Monatsblätter, 1869.

** 'Am. Journal of Medical Sciences,' January, 1870, pp. 76—80; ibid., October, 1870, pp. 414—420; and 'Trans. Am. Oph. Soc.,' 1870.

experiment, first made by Scheiner, in 1619, by which an object, seen through two or more small holes in close proximity, forms a double or multiple image on the retina in case the retina is not placed accurately at the focus of the refracting media. Scheiner called attention to this in reference to the function of accommodation; Dr. Thompson shows how the same fact may be made to apply to the diagnosis of errors of refraction in general. He places before the eye a blackened screen perforated with pinholes one eighth of an inch apart, and views a gas-flame as an object. If the eye be in any sense ametropic the flame appears double; by putting a red glass over one hole, say the right, the red flame appears in hypermetropia to be on the left side, in myopia on the right side. The object is placed at a distance, and in hypermetropia the accommodation must be relaxed. As Dr. Thompson remarks, this method becomes of practical value in extreme amblyopia, where test-types may not be distinguishable. In such cases, however, we may form a diagnosis by aid of the ophthalmoscope. A special case alluded to, in which there was considerable opacity of the lens, rendering the ophthalmoscopic diagnosis uncertain, does afford scope for the exercise of Dr. Thompson's ingenious suggestions. But it is scarcely probable that they will be very often resorted to.

In the second paper the method is more fully wrought out, and a simple rule of calculation is given, by which the distance of separation of the double images affords the means of deciding the degree of ametropia, and prescribing glasses. This is applied to astigmatism as well as to other refractive defects. The calculation is easy, and the elements are only those of simple proportion. A patient sits at five mètres, about seventeen feet, from a gas-light turned low; he looks through two holes, in a disc placed close to his eye, which are 5 mm. in diameter, and 4 mm. apart. He sees two flames; the surgeon, placing himself by the gas-light, brings a candle-flame in a position coinciding with the false image, and measures its distance from the gas-flame. Take a case:—A patient operated for cataract saw the double lights 10 inches, or 250 mm., apart; his glass is obtained by the problem—

$$\frac{5000 \times 4}{250} = 80 \text{ mm.}$$

The distance of patient from the object, namely, 5000 millimètres, multiplied by the distance between the perforations, viz. 4 millimètres, and divided by the separation of the images he sees, gives the needful glass, whose focal length is 80 mm., or 3·2 inches. The distance of the nodal point from the spectacle frame, which is half an inch, must be allowed for.

That this method of determining ametropia will supersede the usual test-types and glasses the author does not expect, nor can it be considered likely to have any great degree of utility, but we must commend the success of the endeavour, and the ingenuity of the devices employed. It is, at any rate, an interesting study in physiological optics.

Dr. Schobbens* has published the following table of reciprocals,

* 'Ann. d'Oculistique,' lxiv, p. 207.

n	$1/n$	n	$1/n$	n	$1/n$
$\frac{1}{4}$	4·000,000,000	14	0·071,428,571	55	0·018,181,818
$\frac{1}{3}$	2·000,000,000	$14\frac{1}{2}$	0·068,965,517	56	0·017,857,143
$\frac{3}{4}$	1·333,333,333	15	0·066,666,666	57	0·017,543,860
1	1·000,000,000	$15\frac{1}{2}$	0·064,516,130	58	0·017,241,379
$1\frac{1}{4}$	0·800,000,000	16	0·062,500,000	59	0·016,949,133
$1\frac{1}{3}$	0·666,666,667	$16\frac{1}{2}$	0·060,606,060	60	0·016,666,667
$1\frac{3}{4}$	0·571,428,571	17	0·058,823,529	61	0·016,393,443
2	0·500,000,000	$17\frac{1}{2}$	0·057,142,857	62	0·016,129,032
$2\frac{1}{4}$	0·444,444,444	18	0·055,555,556	63	0·015,873,016
$2\frac{1}{3}$	0·400,000,000	$18\frac{1}{2}$	0·054,054,054	64	0·015,625,000
$2\frac{3}{4}$	0·363,636,364	19	0·052,631,579	65	0·015,384,615
3	0·333,333,333	$19\frac{1}{2}$	0·051,282,051	66	0·015,151,515
$3\frac{1}{4}$	0·307,692,307	20	0·050,000,000	67	0·014,925,373
$3\frac{1}{3}$	0·285,714,285	21	0·047,619,048	68	0·014,705,882
$3\frac{3}{4}$	0·266,666,667	22	0·045,454,545	69	0·014,492,754
4	0·250,000,000	23	0·043,478,261	70	0·014,285,714
$4\frac{1}{4}$	0·235,294,117	24	0·041,666,667	71	0·014·084·517
$4\frac{1}{3}$	0·222,222,222	25	0·040,000,000	72	0·013,888,889
$4\frac{3}{4}$	0·210,526,316	26	0·038,461,538	73	0·013,698,630
5	0·200,000,000	27	0·037,037,037	74	0·013,413,514
$5\frac{1}{4}$	0·190,476,191	28	0·035,714,286	75	0·013,333,333
$5\frac{1}{3}$	0·181,818,182	29	0·034,482,759	76	0·013,157,895
$5\frac{3}{4}$	0·173,913,044	30	0·033,333,333	77	0·012,987,013
6	0·166,666,667	31	0·032,258,065	78	0·012,820,513
$6\frac{1}{4}$	0·160,000,000	32	0·031,250,000	79	0·012,658,228
$6\frac{1}{3}$	0·153,844,154	33	0·030,303,030	80	0·012,500,000
$6\frac{3}{4}$	0·148,148,148	34	0·029,411,765	81	0·012,345,679
7	0·142,857,143	35	0·028,571,429	82	0·012,195,122
$7\frac{1}{4}$	0·137,931,034	36	0·027,777,778	83	0·012,048,193
$7\frac{1}{3}$	0·133,333,333	37	0·027,027,027	84	0·011,904,762
$7\frac{3}{4}$	0·129,032,258	38	0·026,315,789	85	0·011,764,706
8	0·125,000,000	39	0·025,641,026	86	0·011,627,907
$8\frac{1}{4}$	0·121,212,121	40	0·025,000,000	87	0·011,494,253
$8\frac{1}{3}$	0·117,647,058	41	0·024,390,244	88	0·011,363,636
$8\frac{3}{4}$	0·114,285,714	42	0·023,809,524	89	0·011,235,955
9	0·111,111,111	43	0·023,255,814	90	0·011,111,111
$9\frac{1}{4}$	0·108,108,108	44	0·022,727,273	91	0·010,989,011
$9\frac{1}{3}$	0·105,263,158	45	0·022,222,222	92	0·010,869,565
$9\frac{3}{4}$	0·102,564,103	46	0·021,739,130	93	0·010,752,688
10	0·100,000,000	47	0·021,276,600	94	0·010,638,298
$10\frac{1}{2}$	0·095,238,095	48	0·020,833,333	95	0·010,526,346
11	0·090,909,091	49	0·020,408,163	96	0·010,416,667
$11\frac{1}{2}$	0·086,956,521	50	0·020,000,000	97	0·010,309,278
12	0·083,333,333	51	0·019,607,843	98	0·010,204,082
$12\frac{1}{2}$	0·080,000,000	52	0·019,230,769	99	0·010,101,010
13	0·076,923,077	53	0·018,867,925	100	0·010,000,000
$13\frac{1}{3}$	0·074,074,074	54	0·018,518,519	108	0·009,259,259

which might with advantage be fastened for reference within the cover of every case of testing lenses. The reciprocal of any number is the result of dividing unity by that number. The numbers are contained in the columns marked *n*, the reciprocals in the columns marked $1/n$.

By means of this table all the calculations required for the employment of lenses are much facilitated, as will be shown by the following examples. We often wish to know to what single lens two others are together equivalent. Two cases present themselves:

1.—*Lenses of the same kind.*—To what lens would the combination of No. 10 with No. 6 be equivalent?

The reciprocal of	10	is 0·100,000,000
,,	6	,, 0·166,666,667
Added together		0·266,666,667

On turning to the column $1/n$, we find this sum to be the reciprocal of $3\frac{3}{4}$. This would be the number of the lens equivalent to the union of 6 with 10.

2.—*Lenses of different kinds, one concave, the other convex.*—What is the equivalent of 7 convex with 21 concave?

The reciprocal of	7	is 0·142,857,143
,,	21	,, 0·047,619,048

Subtracting the lesser from the greater, we have 0·095,238,095; which, sought in the column $1/n$, is found as the reciprocal of $10\frac{1}{2}$. As the reciprocal of the convex lens is the larger, the resulting lens is also convex; and if the 7 had been the concave, the resulting $10\frac{1}{2}$ would have been concave.

When the sum or remainder is not exactly to be found in the column $1/n$, we take the nearest number, unless there is an indication for selecting a weaker or a stronger lens. Thus, if we seek the equivalent of 14 concave with 19 convex—

The reciprocal of	14	is 0·071,428,571
,,	19	,, 0,052,631,579
Leaving a remainder of		0·018,796,992

This number is intermediate between the reciprocals of 53 and 54, but nearer to the former, and we therefore take 53 concave, unless there be some reason for choosing a weaker lens, in which case we should take 54.

Many questions in optics contain the formula $\pm\frac{1}{\varphi} = \frac{1}{p} \pm \frac{1}{q}$. It is manifestly very easy to solve them by reciprocals. Thus, the first case stated becomes $\frac{1}{10} + \frac{1}{6} = \frac{4}{15}$; and the second is either $\frac{1}{7} - \frac{1}{21} = \frac{2}{21}$, or, as the case may be, $\frac{1}{21} - \frac{1}{7} = -\frac{2}{21}$.

If we wish to find a lens one sixth the strength, say of $3\frac{1}{2}$, we find the reciprocal of $3\frac{1}{2} = 0{\cdot}285,714,285$. One sixth part of this is = 0·047,619,047, which is found as the reciprocal of 21; so that six lenses of 21 are equivalent to one of $3\frac{1}{2}$.

The table will be found very useful in prescribing for astigmatism. Suppose a case in which a patient requires No. 10 convex for one chief

meridian, and No. 8¾ for the other. We take 10 as the convex spherical lens, to which a cylindrical is to be added, and proceed as follows:

The reciprocal of	8¾	is 0·114,285,714
„	10	„ 0·100,000,000
The remainder		0·014,285,714

is the reciprocal of 70; and hence a plano-convex cylinder of 70, added to a plano-convex spherical of 10, will be the combination required.

Let us suppose also a case in which there is $\frac{1}{2\frac{1}{4}}$ of manifest and $\frac{1}{4}$ of total hypermetropia, and in which it is desired that the spectacles first ordered should correct the whole of the manifest and one fourth of the latent defect

The reciprocal of	7	is 0·142,857,143
„	24	„ 0·041,666,667
The remainder		0·101,190,476

which gives, as the latent hypermetropia, something intermediate between 9¾ and 10, but nearer to the former. Dividing the remainder by 4, we obtain 0·025,297,619, or nearly the reciprocal of 39. If we add this to the reciprocal of 24, the sum is 0·066,964,286, a little more than the reciprocal of 15, and less than that of 14½. In such a case we may always prescribe somewhat in excess of the calculated strength, and may give a glass of 14½ or 14 as one that corrects the whole of the manifest and one fourth of the latent defect.

Dr. Schobbens gives other examples, which it is not necessary to cite, since the practical applications of the table cannot fail to suggest themselves to all who may possess it.

Reuss* laid before the Heidelberg Congress the results of ophthalmometric measurement of thirty-one eyes from which cataract had been extracted, with reference to the resulting astigmatism. In twenty-three cases measurements were taken before and after operation; in eight only after. Some degree of astigmatism was found in all, but it underwent diminution up to about five or six months; and the degree depended to some extent on the character and position of the section.

Woinow† communicates the results of ophthalmometric measurements of the curvatures of the crystalline lens. The observations were made in Helmholtz's laboratory, with solar instead of with artificial light. The result was to show a greater increase of convexity of the posterior curvature of the lens during the accommodation effort, than had been heretofore supposed to take place.

Dr. Monnik,‡ whose endeavours to improve instruments for the estimation of ocular tension are well known, describes the latest improvements in his tonometer. The instrument is in the form of a watch, from which project two stems, one of which terminates in a sort of fork of two extremities, about eight millimètres apart. The other stem terminates in a single extremity, which comes into line with the other two, and is placed half way between them. The operator presses the extremity of the central stem against the eye to be examined until

* 'Klinische Monatsblätter,' 1869. † Ibid.
‡ 'Arch. f. O.,' xvi, 1, p. 49.

it is so pushed back that all three extremities are in contact with the organ, and a needle on the dial then registers the curvature of the arc that would pass through them all. A dynamometric spring is then brought into relation with the central stem; and another needle registers the number of grammes of pressure which are exerted to produce the indicated degree of depression.

(*b*) *Surgery.*

Dr. A. Sichel, fils, has published* a posthumous memoir on Caries of the Orbit, on which his late father was engaged for many years, and which is the fruit of great clinical experience. Mr. Spencer Watson† has reprinted some papers on orbital tumours, originally contributed to the 'Medical Mirror;' and from his own experience and other sources has brought together the records of many remarkable cases. Knapp‡ gives an account of an orbital cancroid tumour involving the inner portions of both eyelids. He removed the tumour with the affected skin, and immediately repaired the loss by a plastic operation. The manner in which this was done is illustrated by drawings; and the ultimate result was extremely successful.

Dr. Dorreau§ relates a case in which a blow from a stick left two fragments impacted in the nasal duct. They occasioned suppuration and a fistulous opening upon the cheek; but their presence was not discovered for six months after the infliction of the injury. They were then extracted, and the case did well. Förster‖ and Graefe¶ describe fungoid accumulations (leptothrix) in the lachrymal passages. Dr. Williams, of Cincinnati, claims to have attained to a speedy and almost certain cure of lachrymal obstructions.** He introduces a style of pure silver, to be worn for some weeks or months, and employs also frequent astringent injections.

Professor Nagel recommended to the Heidelberg Conference†† the use of collyria, containing hydrochlorate of quinine, in certain chronic forms of inflammation of the conjunctiva and cornea, and especially when there was any tendency to sloughing of the latter.

Iwanoff‡‡ related the results of the microscopic examination of three eyes suffering from phlyctenular ophthalmia. He states that the disease consists essentially of the deposition of a collection of lymph-cells between the epithelium and Bowman's membrane, and that these cells not only produce destruction of the epithelium and a superficial ulcer, but that they also burrow by the side of nervous filaments into the true tissue of the cornea. It is to the irritation and compression of the nerves that he attributes the photophobia so often associated with the malady.

* 'Annales d'Oculistique,' 1870, vol. ii.
† 'On Abscess and Tumours of the Orbit,' London, 1870.
‡ 'Archives of Ophthalmology and Otology,' p. 132.
§ 'Arch. de Méd. Navale,' 1869, xii, p. 151.
‖ 'Arch. f. O.,' 1869, p. 318.
¶ Ibid., p. 284.
** 'Archives of Ophthalmology and Otology.'
†† 'Klinische Monatsblätter,' 1869.
‡‡ Ibid.

Under the title of creeping ulcer of the cornea (*ulcus serpens*), Saemisch* describes an affection not previously mentioned by writers, but of which he has met with several examples. The special character of the ulceration is its tendency to spread both in extent and in depth. It usually commences near the middle of the cornea, and progresses towards one side only, which is marked by a line or crescent of grey infiltration. It becomes a funnel-shaped cavity, and, in about 60 per cent. of the cases, is attended by hypopyon. It is always complicated by iritis, but the amount of irritation is very variable. In view of the small results afforded by ordinary methods of treatment, Saemisch has practised a complete division of the ulcer. He passes a Graefe's cataract-knife into the anterior chamber, at a point of the cornea about one millimètre on the temporal side of the margin of the ulcer, keeping the cutting edge forwards, and makes a counter puncture about a millimètre on the nasal side of the margin, and then divides the intervening tissue. The edges of the wound will be sufficiently united in an hour to allow of the instillation of atropine, and in slight cases all will go well. In more severe cases the ulcer resumes its spreading character in a few days, and then Saemisch reopens the wound with a fine probe or with Weber's lachrymal knife. This reopening is done twice a day at first, and afterwards once a day. Out of 35 cases thus treated 34 made good recoveries.

The subject of abscess of the cornea has been treated by Prof. F. Arlt,† who defines the disease to be a collection of pus, enclosed by unaltered layers of the corneal membrane. It is to be distinguished from ulcers, in which the pus is more or less exposed, and in which, besides the epithelium, at least Bowman's membrane is absent; and from inflammatory infiltrations, in which, if there should be softening of the product, an ulcer is immediately formed on the anterior surface of the cornea. In abscess the pus may be either produced where it appears or may travel from another part, the first class of abscesses being called autochthones, the latter abscesses of migration (onyx). In both cases there is a cavity, bounded at least by the membranes of Bowman and Descemet, and usually by uninjured layers of corneal structure. Frequently, also, the cavity is traversed by corneal fibres; and it may be in communication by a comparatively narrow channel, with either the anterior chamber or the conjunctival sac.

The author confines himself entirely to the autochthonous abscesses, which are generally to be recognised easily, and to be distinguished from analogous conditions, when the layer of purulent matter is sufficiently thick to present its characteristic pale yellow colour. It may, however, be so thin as only to appear greyish, and then the following characters must be taken into account. The deposit, when it does not reach the corneal margin, is always circular, never in the form of a band, a triangle, or any irregular figure. It is only after absorption or partial evacuation of the contents that the circularity is lost. The grey or yellow purulent disc, often still transparent, and then diversified by deeper spots or striæ, has limits that are easily distin-

* 'Das Ulcus serpens Corneæ, und seine Therapie,' Bonn, 1870.

† 'Archiv f. Ophth.,' xvi, 1.

guishable, although not sharply defined. At the border there will be a slight elevation, and the abscess appears to be surrounded by a halo of clear grey, marked by radiating striæ. The surface is always dull, and is often here and there denuded of its epithelium. The aspect depends upon both the colour and the quantity of the contained fluid. The surface may be altogether prominent, but more frequently only in places, especially towards the lower border or some other part of the margin; sometimes it is regularly or irregularly depressed below the normal surface, but never so as to form a funnel-shaped cavity, nor to be surrounded by abrupt margins. It may be pierced by a single perforation, or by holes like a sieve; and eventually the anterior wall may be altogether displaced by the movements of the lid. In very slight cases, when the pus formation is small in quantity, the presence of an abscess is often difficult to determine. At first there is only to be seen a diffused turbidity and some dulness of the cornea, with more or less ciliary injection. At the next visit, perhaps, the periphery of the cornea will again be clear, smooth and lustrous, while the centre presents a defined circle with a slightly deeper margin, from two to four lines in diameter, of a dull grey, deprived here and there of epithelium, and often of a gelatinous aspect. Through a lens, or even by the naked eye, this circle is seen to contain spots or striæ of deeper colour, probably due to aggregations of pus-corpuscles. We can only be quite certain of the existence of an abscess when the presence of pus declares itself either by a yellow turbidity at some part of the margin or in the form of onyx or hypopyon. If, after the lapse of a day or two, no such accumulation should appear, there remains only the circular turbidity, in which the presence of pus cannot be determined with certainty. This slight form need not be dwelt upon at any length, although it is of interesting character, and does not appear to have been previously specially described. Unless neglected, and suffered to reach an advanced stage, it will speedily recover under the use of atropine and a compressive bandage.

In declared abscess the degree of participation of the nervous and vascular systems varies greatly, even in the same individual. The pains in the eye and the corresponding side of the head, as well as reflex irritation of the iris, the lachrymal glands and the orbicular muscles, may be violent or very slight. The circumcorneal redness, chiefly that dependent upon the anterior ciliary arteries, subsequently that of the whole of the ocular conjunctiva, is at first vivid and bright; but generally soon becomes dull, and at last ceases to be very marked. The general aspect of the eye recalls that of neuro-paralytic keratitis, but differs from this in that the conjunctival secretion is unaltered in character or quantity, and that sensibility is retained. The development of vessels in the cornea, beneath Bowman's membrane, is seen only at a somewhat advanced period, and has a less favorable significance than in cases of open ulcer, where such development prevents an extended breaking up of the corneal tissue.

It is comparatively rare to see the very commencement of a corneal abscess, more on account of the rapid formation of pus than from delay in seeking advice. Especially in cases of traumatic origin, not

more than twenty-four hours may elapse between a perfectly normal state and the complete development of an abscess. At first, the pus-corpuscles are interspersed among the parenchyma of the cornea, and the eventual cavity of the abscess is only dull and grey, and not yet with a distinctly limited boundary. At this period the corneal injection is usually of a bright red, and abscesses can only be diagnosed by reference to etiological data, such as injury to the cornea, pre-existing variola, &c., &c. Afterwards, when the yellow colour and the circular boundary are well marked, the pus-corpuscles probably do not form a continuous liquid, but are infiltrated in the tissue as in a felt, so that they cannot be evacuated by puncture. It is only by the duration of the inflammatory process, by considering its more or less acute character, by the duller colour of the pericorneal injection, by the more distinct appearance of the yellow of pus, and especially by palpation of the spot by a sound or Daviel's scoop, that certainty of obtaining liquid by puncture can be reached. In time, however, a trustworthy symptom of total breaking down and of the confluence of pus-corpuscles is displayed—this is the absence of resistance and the apparent depression of the anterior wall of the abscess, a state which must not be confounded with a complete or partial stripping of the epithelium. At this period the abscess may be easily mistaken for a superficial ulceration, and the pus is often found in some second locality, rarely as onyx, more frequently as hypopyon.

The depression of the anterior wall may be explained in various ways. In some cases there can be no doubt that, when the process has reached a certain height, a portion of the contents of the abscess may be removed by absorption. It happens also that the pus may pass between the fibres of the cornea and show itself as onyx. By lateral illumination it is sometimes possible to see a turbid streak between the ulcer and the onyx, showing the route taken by the pus. Sometimes perforation takes place at one or more points, and allows the escape of pus, leaving an opening through which a probe may be introduced and moved about in the cavity. Spontaneous perforation of the posterior wall may also occur, leading to the form of hypopyon which was called *true* by Himly and ancient writers, *false* by Mackenzie and others.

When the cavity of the abscess is nearly empty, and its walls have fallen together, a well-defined line of pus is left in the angle all round the margin, held there by capillarity, and forming a distinct zone encircling a lighter centre. It is then easy to mistake the condition for a superficial ulcer, having an annular or falciform nebulosity at its margin, and with a tendency to spread.

It is necessary to inquire what is the reason of this tendency to superficial extension, rather than to perforation and escape of the aqueous humour, the latter result being desirable, since it generally arrests the suppurative process. In the first place, we have the clinging of the pus to the already described angle between the parietes, and the consequent tendency to the extension of the suppurative process by contiguity; and next, the to-and-fro movements impressed upon the anterior wall by those of the eyelids. A consideration of these conditions leads us

to the two essentials for recovery, namely, the complete evacuation of pus and the immobilization of the eyelids by a bandage.

After fully discussing from various points of view the considerations which lead him to connect hypopyon with consecutive iritis rather than with rupture of the abscess—after assigning mechanical injury, exposure to cold, inflammation of the tear-passages and smallpox, as the principal causes of the malady—and after saying that no better result than a permanent leucoma can be hoped for in any case, while the eye may be wholly lost in those that progress unfavorably, the author proceeds to discuss the question of treatment. At first, this should be the same as for iritis, which, if not actually present, may commence at any moment. Both eyes should be protected from strong light and from abrupt changes of illumination, the accommodation should not be called into play, and the affected eye should be brought under the influence of atropine. At the same time, it is necessary to consider whether we have to deal with an actively inflammatory or an asthenic suppuration. In the former case we may have recourse to local depletion, to anodyne frictions on the forehead and temple, to morphia injections, to various derivatives and refrigerants, taking care not to lower the vital force of the patient. In the latter case we may employ tonics, good nourishment, wine, fresh air, and, locally, hot poultices or an occasional touch with some stimulating application, such as a finely pointed stick of diluted nitrate of silver. In either, indications for opening the abscess, or for evacuating the contents of the anterior chamber, may be furnished by manifest increase in the quantity of pus or in the tension of the eye-ball, and the author has generally made a puncture with an iridectomy knife. If the abscess should increase, or pain return, after twenty-four hours, the wound may be reopened with a Daviel's spoon, but at a later period a fresh puncture must be made. Although repeated opening was long ago recommended by Himly, the experience of the author is not favorable to it, since he has not observed good results after two or three introductions. The data recently published by Saemisch (whose *ulcus serpens* he holds to be really abscess) point to a further trial of the method and after any kind of puncture the careful application of a lightly compressive bandage is important, especial care being taken to avoid the production of inversion of the lower lid.

The subject of trachoma and granulations has been dealt with at some length by Dr. Hairion,* who gives the following résumé of his treatment:—In the first stage he prescribes careful watching against the communication of the disorder to others, and cauterization every six or eight days with fused sulphate of copper. A solution of nitrate of silver, of 1 to 60, is equally efficacious, but liable to injure the conjunctival tissue if used unskilfully. The solution of subacetate of lead, diluted with an equal quantity of distilled water, cures quickly when it is successful, but is in many cases followed by violent and obstinate reaction. Mucilage of tannin is of more tardy efficacy, but it is quite harmless, and may be used by the patient. Under its influence the conjunctiva may even return to its physiological appearance. In

* 'Annales d'Oculistique,' 1870, i, p. 5.

second stage cauterization with sulphate of copper should be repeated once or twice a week; the tannin mucilage should be used every evening, and iodide of potassium given in a dose of about four grains daily, with frequent laxatives. The sulphate of copper should be occasionally laid aside in favour of diluted nitrate of silver. In very old cases, in which the granulations are dry and indolent, and in which there is pannus, hot fomentations may be used, as recommended by von Graefe, or deliquesced chromic acid may be used as a caustic. If the pannus be general, and the vascularization of the cornea sufficient to protect it against sloughing, inoculation with the discharge of purulent ophthalmia may be had recourse to. In the third stage, if the palpebral conjunctiva be converted into an irregular cicatricial tissue, this may be rendered more smooth and yielding, and less injurious to the cornea, by a few applications of chromic acid. If there be absolute xerosis, there should be frequent applications of warm milk, sweet oil, or glycerine, and deformity of the lids should be remedied by operation. The same subject has also been considered by Gosselin,* Wecker,† Thiry,‡ Peltzer,§ and Blumberg.‖

Dr. Höring communicated to the Ophthalmological Society of Heidelberg¶ a case of luxation of the crystalline, produced by a blow. The patient had previously lost the other eye from irido-cyclitis, following the extraction of a traumatic cataract. He came to Dr. Höring six weeks after the receipt of the second injury. The remaining eye was slightly injected, sensitive to light, and watering freely; the pupil irregular and displaced upwards; and the lens, in its capsule, lying in the anterior chamber, about an eighth part of its circumference, in a downward and outward direction, being still covered by the iris. The lens was somewhat rotated on an oblique axis, so that its upper and inner margin was directed forwards. The acuity of vision was much diminished, the patient only counting fingers at 2′, and reading 23 Jaeger at 5′, and no glasses assisted him. He was very unwilling to undergo an operation, and Dr. Höring therefore determined to attempt reduction. For this purpose the man was kept on his back in bed until the pupil was very widely dilated with atropine, so as to clear the margin of the lens. Calabar bean was then instilled every two hours, in the hope that the contracting pupil would pass in front of the lens and press it back. The contraction was imperfect, but still the iris came in front of the lens, excepting at the point where its margin projected forwards. The patient was discharged, got drunk, vomited, and returned with his lens once more displaced. The second attempt at reduction was completely successful, a high degree of myosis was maintained for several days, and the patient was discharged able to read 19 Jaeger with the naked eye, and 14 through a glass of + $\frac{1}{8}$. At the same *séance* Dr. E. Meyer communicated the further history of a patient with congenital luxation

* 'Archives Générales de Médecine,' Avril, 1869.

† 'Gaz. Hebdom.,' 1869, p. 232.

‡ 'Presse Médicale Belge,' 1869, p. 146.

§ 'Die Ophthalmia Militaris sive Granulosa,' von Dr. Max Peltzer, 8vo, pp. 110, Berlin, 1870.

‖ 'Arch. f. O.,' 1869, p. 129.

¶ Session of 1869, 'Comptes Rendus.'

of both lenses, whose state had been described by Follin six years previously. The lenses were then displaced upwards and inwards, and the patient required strong convex glasses. In the interim the lens of the left eye had become more displaced in the same direction, leaving the greater part of the pupil free, while that of the right eye had fallen back towards its normal position. The result was, that the patient, who was naturally myopic, now required a concave 7 or 8 for the right eye, and a convex $3\frac{1}{4}$ or 4 for the left. The case was interesting, as affording data by which to determine the index of refraction of the crystalline.

A case of luxation, which also afforded important data of the same character, has occurred in America, and has been fully described by Noyes.*

Professor G. A. Gioppi,† of Padua, has described a method of extracting the lens in its capsule. He makes a linear incision in the sclero-corneal junction, with a knife resembling Graefe's, and introduces a scoop in such a manner that its convexity glides over the iris to the pupillary margin. He then rotates the scoop, moving its handle forwards and its blade backwards, in such a way that it first pushes back the pupillary margin towards the wound, and then passes behind the equator of the lens to the hyaloid fossa. It is then caused to rupture the zonula, and is pushed on behind the posterior capsule until it reaches the equator on the opposite side. The rotation is then continued very slowly in an opposite direction, that is, the handle is depressed and the blade elevated, while, at the same time, a continuous movement of extraction is performed, the scoop becoming a lever of the third kind, with the sclerotic edge of the wound as its fulcrum.

Knapp‡ records the results of his third hundred of cases of cataract extraction by von Graefe's method. He states that, of these 100 cases, there were 89 operations executed without any accident whatever from the beginning to the end, and that of the untoward accidents which accompanied 11 operations, 4 only could be laid to the charge of the operator. By considering all eyes the sight of which was lost or destroyed as failures, all those with $S < \frac{1}{10}$ as imperfect results, and those with $S =$ or $> \frac{1}{10}$ as perfect results, there were—losses, 3; imperfect results, 15; perfect results, 82. Most of the imperfect results were amended by subsequent operations; and the ultimate result was, that 3 per cent. of loss, 6 per cent. of imperfect, and 91 per cent. of good success were obtained. The author enters fully into the details of his method of operating.

Wilson§ has also written very favorably of the results of the same procedure.

Two cases of delirium in old people, supposed to be due to the instillation of atropine after the extraction of cataract, have been published by Revillont‖ and Laurenzo.¶

* 'Archives of Ophthalmology and Otology.'
† 'Giornale d'Oftalmologia Italiano,' 1869.
‡ 'Archives of Ophthalmology and Otology.'
§ 'Dublin Quarterly Journal,' May, 1870.
‖ 'Bull. de Thérap.,' Oct., 1869.
¶ 'Gaz. des Hôp.,' 1869, No. 123.

Horner* communicated to the Heidelberg Congress the good results that he had obtained, in severe cases of irido-cyclitis after extraction, by thrusting a narrow double-edged knife through the closed pupil and false membranes deeply towards the posterior segment of the globe. The vitreous, pressing forward towards the cornea, tended to maintain the new pupillary opening; the external wound was small, and the bleeding insignificant. In some instances the operation had been followed by success altogether unhoped for.

Lebrun† relates a case that is probably unique. A man, aged 39, suffered from some slight irritation of the eye, for which a practitioner ordered the application of a leech. It was applied *to the cornea*, at its lower and outer margin, and there filled itself. Displacement of the pupil followed, as if from iridesis, iritis and hypopyon were succeeded by chronic inflammation and phthisis bulbi, which at last gave rise to threatenings of sympathetic ophthalmia of the other eye, and demanded the extirpation of that which had been leeched. The patient made a good recovery; but the vision of the second eye was somewhat impaired.

Dr. Laqueur‡ lays stress upon interruption of vision as an early symptom of sympathetic ophthalmia. It has long been known to physiologists that, if one eye be steadily fixed upon an object, the object after a while becomes dim and disappears, probably as a result of fatigue of the nerve elements. When one eye is lost, and the other is predisposed to disease, this "interruption of vision" is sometimes so easily produced as to be made a matter of complaint by the patient.

Dr. Laqueur§ publishes the results of the clinical observation of 268 cases of glaucoma. About twelve of these cases occurred in the practice of Dr. Schmitz, at Cologne, the remainder in that of Dr. Liebreich, at Paris. He considers this number sufficient to serve as a basis for conclusions about the comparative frequency of different forms, as well as about the predisposing influences of sex, age, and refraction. With regard to sex, his cases (which include all the glaucomatous affections, that is, not only typical glaucoma, but all maladies attended by increase of intra-ocular tension and excavation of the optic nerve) were furnished by 156 women and 112 men. These numbers agree with those given by other observers of large experience; and they show a proportion of about 58·2 per cent. of women, to 41·8 per cent. of men; or, in other words, that glaucomatous women are to men nearly as 3 to 2. The influence of age is very marked; for although typical glaucoma is occasionally met with even in children, yet it is extremely rare before the age of forty, and the forms seen prior to that period of life are chiefly consecutive to other affections. Between forty and fifty the disease becomes comparatively frequent. The following gives the ages of 252 patients of both sexes:—

* 'Klinische Monatsblätter,' 1869.

† 'Annales d'Oculist.,' 64, p. 136.

‡ 'Sur les Affections Sympathiques de l'Œil,' par Dr. Louis Laqueur;' Thèse. Paris, 1869.

§ 'Annales d'Oculistique,' 1869, i, p. 33.

Ages.	10 to 20.	20 to 30.	30 to 40.	40 to 50.	50 to 60.	60 to 70.	70 to 80.
No of persons	6.	11.	11.	49.	80.	66.	29.

On account of impairment of vision and turbidity of the media, it is often impossible to determine the state of refraction; but the author was able to do so in seventy-three cases, which he divides into three classes. The first includes emmetropia and slight hypermetropia; the second hypermetropia of $\frac{1}{30}$ and upwards; the third, all cases of myopia, however slight. The proportions were as follows:—

E. and slight H.	H. above $\frac{1}{30}$.	All grades of M.
10 women. 8 men.	21 women. 16 men.	4 women. 14 men.
18 cases.	37 cases.	18 cases.

The preponderance of males among the cases of myopia is very remarkable. Among the four women, there was M. 7 $\frac{1}{8}$ in only one; but in seven of the fourteen men. In these seven there were two cases of M. = $\frac{1}{4}$, and one of M. = $\frac{1}{4}$, $\frac{1}{2}$. The last was in a boy twelve years old. More than half of the patients were hypermetropic; and, among the 37 cases of pronounced hypermetropia, there were twelve of H. 7 $\frac{1}{16}$, and nine of H. 7 $\frac{1}{10}$. The maxima were—$\frac{1}{9}$, $\frac{1}{8}$, three times $\frac{3}{22}$, $\frac{1}{6}$, and $\frac{1}{5}$. Among 73 persons, there were nine presenting the highest degrees of hypermetropia that are seen in practice. Considering that H. 7 $\frac{1}{10}$ is seldom met with, and that H. = $\frac{1}{6}$ is as exceptional as M. = $\frac{1}{2}$, the author arrives at the conclusion there is some intimate relation between hypermetropia and glaucoma; and he adduces facts and arguments to show that the former is an early symptom of the latter. His conclusions are:—

(1) The majority of glaucomatous eyes are hypermetropic.

(2) Glaucoma is very rare in eyes strongly myopic; and M. 7 $\frac{1}{4}$ seems to exclude glaucoma.

(3) Hypermetropia cannot be considered as predisposing to glaucoma, but as an effect of it.

(4) It commonly precedes the other glaucomatous symptoms.

(5) It is very probably due to flattening of the cornea.

(6) It is in certain cases removed by the influence of iridectomy.

The field of vision was examined in 175 cases, with the following results:—In 56, or one third, it was undiminished; and in this category were included, especially among women, a relatively large number of acute and sub-acute cases in which central vision was much impaired. There were also numerous instances of chronic glaucoma, and even six cases of simple glaucoma, in which central vision was reduced to $\frac{1}{40}$ or less, without the extent of the field being diminished. In the remaining 119 patients, the field was contracted, in 10, on the outer side only; in 24, on all sides; in 95, on the inner side only, or simultaneously the inner side and in other directions.

There was no apparent relation between the defective portion of the field and the position of the most depressed or wasted portion of the disc; and the author hence infers that the radiation of the nerve fibrils is less regular than has been supposed.*

The relative frequency of different forms of glaucoma is expressed by the following table, which comprises 165 cases. It shows:—

	Acute glaucoma.	Sub-acute glaucoma.	Chronic glaucoma, with severe inflammatory attacks.	Chronic-glaucoma, with slight inflammatory attacks.	Simple glaucoma.
Women ...	19	14	19	29	17
Men	2	4	6	27	28
	21	18	25	56	45
	13%	11%	15%	33%	28%

(1) That simple glaucoma was present in more than one fourth of the whole.

(2) That the acute and sub-acute cases together form less than one fourth of the whole.

(3) That chronic forms, with attacks of inflammation, amount to one half of the whole.

(4) That acute glaucoma is ten times as frequent in women as in men.

(5) That in subacute glaucoma the number of women is thrice that of men.

(6) That the number of glaucomatous women diminishes as we approach the forms in which inflammatory attacks become rare; and falls short of the number of men, in simple glaucoma, in the proportion of 4 to 7.

The authors state, as a rule, that *fourdroyant* glaucoma is a disease of women, that it ordinarily occurs towards the age of 55 or 60 years, and that it is commonly not preceded by any precursory symptoms.

Among the irregular forms of the disease a case is mentioned in which the sclerotic seems to have yielded to increasing tension, producing a high degree of myopia instead of glaucoma; two cases in which retinitis from venous obstruction was an early symptom, and seven in which there was retinal hæmorrhage. In these the effects of iridectomy were uncertain and unsatisfactory.

Out of 234 cases, in 73 one eye only was attacked, in 161 both were attacked. The former cases were chiefly those in which the glaucoma was consecutive to some other form of disease.

Von Graefe† has contributed to the literature of glaucoma a memoir

* Should it not be inferred that impairment of the field is due to compression of the percipient layer of the retina, rather than of the fibre layer?—R. B. C.

† 'Arch. f. Ophthal.,' xv, Abth. 3; and 'Annales d'Oculist.,' 1870, 63.

of extreme value and importance, which is also remarkable as being his last publication, but which is too lengthy, and too full of matter to be capable of any profitable condensation in the space here available. It deals with all the varieties of glaucoma, but in an especial manner with those that are secondary in their character, and consequent upon pre-existing forms of eye disease. A slightly condensed translation, by Mr. Windsor, appears in the first number of the 'Ophthalmic Hospital Reports' for 1871.

Drs. Hippel and Grünhagen* have continued their researches into the influence of the nerves upon intra-ocular pressure; and Adamiuk read a paper on the subject, before the Heidelberg Congress of 1869, which was followed by a prolonged discussion. The same author† has also written on the affect of atropine in altering tension.

Terson‡ relates a case in which a piece of iron, half as large as a grain of wheat, had been encysted for forty-three years by the side of a dislocated crystalline lens.

Berlin§ has published two cases of the extraction of a foreign substance from the corpus vitreum. He lays stress upon the importance of localising a defect of the field of vision, as a guide to the position which a foreign body occupies within the eye.

Dr. C. A. Robertson reports‖ some curious phenomena resulting from reflex nervous action in consequence of traumatic lesion of the eye.

A man, aged forty-one, received a severe blow on the left eye at the time when Dr. Robertson saw him. Staphyloma of the sclera and cornea had formed, globe very hard, cornea insensitive to touch, very little pain, no perception of light. After two months staphyloma increased greatly, and spontaneous rupture took place and was repeated two or three times afterwards. The patient refused enucleation. After several additional months Dr. Robertson was called to see him, suffering from symptoms thought to be precursory of typhoid fever or due to some kidney trouble.

"The patient was exceedingly weak, and without appetite. The pulse was full and soft; skin moist, but sometimes (as stated to me) dry and hot; tongue moist, coated white; urine scanty and bowels constipated. A frequent twitching or spasm of the body occurred. Expression of the face dull, almost stolid. The fingers of one hand were constantly rubbing or working on the ala of the left nostril. The patient made no remark except when questioned or when startled by a sudden noise. In answer to a question he said his eye did not hurt him, but he had darting pains in the head. The staphyloma was larger than I had seen it before. His manner was listless, and his mind enfeebled rather than delirious, although he was sometimes decidedly delirious at night, as his wife stated. He would wake frequently as if from a frightful dream, and spring up excitedly in bed, trembling with

* 'Arch. f. O.,' 1869, p. 265.
† 'Annales d'Oculist.,' 1870, p. 108.
‡ 'Revue Méd. de Toulouse,' 1870, p. 12.
§ 'Archives of Ophthalmology and Otology.'
‖ 'Trans. Am. Oph. Soc.,' 1870, pp. 110—113.

terror, and it would be long before he regained his composure. Even when awake, and in the daytime, a sudden noise in the house or street would startle him and make him exclaim, while shaking with fear, 'What's that?'

"On consulting with the attending physician, I stated my opinion to be that all the symptoms were due to perverted action of the reflex nervous system, and that the diseased eye was the exciting cause of all this perturbation. I urged the immediate abscission of the front of the globe, since the patient had previously refused to have the entire ball removed. He smiled at what seemed to him the absurdity of my opinion. He concurred with me that the eye was a hideous deformity, and that the patient could endure an operation for its removal, and with that view he would not oppose an operation as an experiment, to confirm or subvert my opinion. Accordingly, chloroform was procured, and the patient anæsthetized. A liberal abscission was made according to the method of Mr. Critchett, of London.

"All perverted nervous action ceased after the operation. During the first night the sleep was refreshing, and but little disturbed. In a week after removal of sutures the patient came to my office to show himself, having travelled eight miles. All local irritation had subsided, and an excellent stump existed for the support of an artificial eye. He calls himself a well man.

"The nervous phenomena of this case are exceedingly interesting. From the appearance presented by the eye, it was evident, as aforesaid, that the chief violence of the blow was expended upon the superior portion of the ciliary region of the eyeball, and not upon the brow. The iris and ciliary region, and to some extent the cornea, are supplied by filaments of distribution from the ophthalmic or ciliary ganglion of the great sympathetic nerve, situated on the outer aspect of the optic nerve in the posterior chamber of the orbit. A few of the ciliary nerves are derived from the naso-ciliary nerve. This ganglion serves as a medium of connection between the trifacial (branches of which are largely supplied to the cornea) and the oculo-motor, or third pair. The nasal nerve is a branch of the frontal, and, besides its ciliary relations, is also joined by a filament of the sympathetic.

"These nervous connections will account for the irritation about the nose, the head pains, and the cerebral symptoms, while the spasms and other constitutional disturbances were doubtless caused by irritation of terminal branches of the great sympathetic nerve."

Prof. Alfred Graefe * describes a very curious succession of spasmodic affections of various ocular muscles. The patient was a girl, 18 years of age, who, in 1867, had been under treatment for trachomatous conjunctivitis of both eyes. Her health was then fairly good, but she had suffered during childhood from scarlet fever, followed by renal dropsy, and also from anæmia and scrofulous affections. In the spring of 1868 she sought advice for a spasmodic closure of the left eye, which had commenced during the winter, and had for eight weeks been vainly treated by various internal and external means, including electricity. The affection was a spasm of the eyelids, due entirely to the orbicularis,

* 'Arch. f. O.,' xvi, 1, p. 90.

and answering to von Graefe's description of muscular hyperæsthesia. Pressure upon the point of emergence of the supra-orbital nerve relaxed the spasm, and neurotomy caused it to cease entirely.

In October the spasm suddenly reappeared in the former degree. The anæsthesia left by the neurotomy had disappeared. The spasm was relaxed by pressure upon the orbital foramen, either superior or inferior, and on the third day after the return of the spasm there was deep injection of the ciliary region, with profuse lachrymation and neuralgia. Vision and accommodation were normal. Atropine and local depletions brought about the cure of the ophthalmia by the eleventh day; but it returned, and displayed rapid alternations of greater and less irritation, while the spasm continued constant. As all remedies tried were without effect, division of the inferior orbital nerve was performed; and although the anæsthesia scarcely extended beyond the internal half of the eyelid and the left side of the nose, the spasm ceased completely. On the following day the ophthalmia also had disappeared. In February, 1869, a third attack took place, but this time the ophthalmia appeared half a day before the spasm. This ceased upon pressure on the point of emergence of either orbital nerve, and underwent a certain remission upon pressure upon any point of the face, head, neck, or shoulders. The eye, completely closed by the spasm, could be opened almost without difficulty under the influence of such pressures, but without them the utmost efforts of the patient could not separate the tarsal margins by more than a single line. The ophthalmia had the same character as formerly. On the eighth day there appeared also a convergent strabismus of four lines. An exact analysis of the phenomena was scarcely possible, but there was certainly no paralysis of the abductor.

Both orbital nerves being again divided, the anæsthesia returned and the spasm ceased, but the strabismus and diplopia remained. Careful examination showed a typical form of muscular spasm. When the patient was directed to look rapidly from right to left, the left eye was found to require twice as much time as the right to effect the movement. When the right eye had made its full excursion the left was only at the middle point, and it continued its movement outwards by jerks, ultimately arriving at complete abduction. The left eye gave also a false projection of the field of vision and the other ordinarily associated phenomena.

After fourteen days of unavailing treatment the left internal rectus was divided. Although there had been four lines of convergence, on the day following the operation there was divergence to two lines, as if the operation had been performed on an eye in a state of normal equilibrium. The tenotomy had completely removed the spasm. To relieve the divergence the muscle was brought forward by suture forty-eight hours after its division, and the success was complete. During the last attack the former emmatropia changed into apparent myopia, which varied between $\frac{1}{30}$ and $\frac{1}{20}$. Under the influence of atropine there was still M. $= \frac{1}{80}$. Employment of the eyes was attended by painful sensations. This myopia was doubtless due to spasm of the accommodation, and it disappeared four weeks after the discharge of

the patient. She had since then been seen several times, last in December, 1869, and had remained in a normal condition.

Professor Graefe regards the spasm in this case as a reflex neurosis, which, in the early period, did not differ from that which ordinarily attends ophthalmia. Such neuralgias are subject to irradiations, which may persist after the original affection has disappeared, and may give rise to secondary foci of disorder. Under this hypothesis the nerve section did not directly cause the removal of the muscular hyperæsthesia, but acted only by the elimination of one of the secondary foci. The spasm of the left internal rectus was complicated by spasm of accommodation in both eyes, and, by showing the relation which exists between the ciliary nerves of the two eyes, confirms the doctrine of sympathetic ophthalmia. It is not necessary, in order to explain the different localizations of spasm, to trace an anatomical dependence between the nerves of the suffering parts, for experience shows that spasmodic affections easily extend from one muscle to another that acts with it synergically, as with the muscle of accommodation and the rectus internus.

The causes and nature of *nystagmus* have been very carefully investigated by Dr. A. E. Gadaud, who has published a treatise on that affection,* which he concludes with the following propositions:

(1) Nystagmus is either symptomatic or idiopathic.

(2) When symptomatic, it indicates either an encephalic lesion or a lesion of the medulla or annular protuberance.

(3) In the former case it is seen, in infants, chiefly with tubercles of the brain; in adults, either after wounds of the encephalon, or after various morbid processes, such as softening, or hæmorrhage.

(4) It constitutes in such cases a passing symptom, often associated with double strabismus and rotation of the head, and indicating a fatal termination.

(5) When it is associated with a lesion of the commissure and medulla oblongata (traumatic, organic, or any other) it is more lasting; and although of itself it has no special meaning, yet it shows that the centres of vital functions are in danger.

(6) It depends upon defective co-ordination of the associated movements of the eyes; and is a phenomenon of the same order as the rotatory movements observed in animals, after lesions of the crura cerebri.

(7) The centre of co-ordination of the associated movements of the eyes may be referred to the grey substance at the level of the protuberance of the floor of the fourth ventricle, and of the restiform body.

(8) When one of these centres is diseased, it is thereby thrown into activity, and its activity is no longer in harmony with that of its fellow; whence follows a derangement of the movements of the corresponding eye. As the movements of the two eyes are synergic, the disorder of one determines a similar disorder in the other.

(9) Such an excitation is not necessarily produced by disease of the centre itself, but may be propagated from neighbouring parts. Hence the diversity of the lesions that have been observed.

* 'Études sur le Nystagmus,' Paris, 1869.

(10) Idiopathic nystagmus may in certain cases be considered as an affection of nervous origin, a sort of partial chorea; but more frequently as a disease of the muscles of the eye.

(11) When purely nervous, it is always congenital; when muscular, it may be either congenital or acquired.

(12) Congenital muscular nystagmus may be complicated with nervous disorder; but it is always accompanied by disorders of refraction or by internal lesions of the eye.

(13) The anomalies of refraction and the nystagmus may be traceable to a common cause, the imperfect development of the eye.

(14) Acquired muscular nystagmus results naturally from an inflammation, traumatic or other, which has extended from the eye to the muscle.

(15) There occurs in both cases a defect in the length and the extensibility of one or more of the muscles of the eye.

(16) Muscles that are shortened are dragged upon by their antagonists, and are thrown into convulsive action.

(17) These convulsions are of two kinds. The first occur around the antero-posterior axis of the eyes in the oblique muscles, and produce oscillations; the second in the vertical or horizontal diameters, and produce jerks.

(18) The direction of the jerks is opposite in the two eyes; and is reversed in either, when the other is covered by ground glass.

(19) There is always, excepting in nervous nystagmus, a direction of the eyes in which the jerks cease.

(20) The causes which produce variation in the intensity of nystagmus are:—*a*. Those which remove the axis of vision from the position of repose of the eye. *b*. Mental emotion, sleep, and anæsthesia.

(21) Nystagmus and binocular vision are incompatible.

(22) Idiopathic nystagmus does not demand a grave prognosis, and generally admits of amelioration.

(23) The treatment may be palliative or curative.

(24) The palliative treatment consists in the correction of anomalies of refraction by appropriate glasses, tinted with cobalt blue.

(25) The curative treatment consists in tenotomy of the recti muscles to arrest the jerks, and in tenotomy of the inferior oblique to arrest the oscillations.

(26) These two means may be aided by a third—ocular gymnastics.

Dr. Rosborough Swanzy* describes a case of idiopathic wasting of the eyeball, the *essentielle phthisis* of von Graefe, by whom† and by Nagel‡ the only two cases previously on record have been described. The present case occurred in von Graefe's clinique.

The patient, a woman, 37 years of age, had hard cataract in both eyes. She had never before had impaired vision; there was no sugar in her urine; the perception and projection of light were good, and the phosphenes well marked. Von Graefe extracted both cataracts on the 24th of May, 1869. Considering the early age of the patient and the absence of any manifest cause of the opacity, he diagnosed some affection of the vitreous, and anticipated that a portion would be lost

* 'Annales d'Oculist.,' lxiv, p. 212. † 'Arch. f. O.,' xii, 2, 256. ‡ Ib., xiii, 2, 407.

during the operation. This expectation was fulfilled, a considerable quantity escaping with each lens. There was at first very marked depression, but under a compressive bandage the eyes recovered their normal consistence in forty-eight hours. The cicatrization took place naturally, except that in the left eye an intermediate semi-transparent substance was formed between the lips of the wound, resembling the cystoid cicatrices sometimes following iridectomy for glaucoma, and at least six millimètres in width, but not elevated. This form of union has been often seen in other cases of cataract, and without any ill effect.

After the operation, on account of the ordinary irritability of eyes from which vitreous has been lost, the patient was kept for three weeks in a darkened chamber. At the end of that time she went into a light room, but on the morrow both eyes became irritable, and there occurred in both an equal degree of ciliary neuralgia, profuse lachrymation, and slight circumcorneal redness. She was sent back to her bed in the darkness, and received a subcutaneous injection of morphia. After the lapse of a few hours all the symptoms had disappeared. A fortnight later she was permitted cautiously to try and accustom herself to light, remaining each day, for a few minutes only, in a half-illuminated chamber.

All went well until the 5th of July, six weeks after the operation. On that day, at the morning visit, the patient complained of a feeling of pressure in the left eye. This feeling had commenced about an hour before she left her bed, and was attended by some indistinctness of vision. There was a slight effusion of blood in the anterior chamber. Traumatic detachment of the retina was feared, and on feeling the globe its tension was found greatly diminished (— T^3). The patient maintained that the eye had not been hurt, and, as she was very intelligent, the suspicion of a blow during sleep was laid aside. Except for the blood in the anterior chamber and a slight circumcorneal injection, the eye presented no abnormal appearance externally. The wound had nowhere reopened, and the cornea was nowhere wrinkled. There was no lachrymation or other sign of irritation. The ophthalmoscope revealed numerous opacities in the vitreous, but no retinal detachment. With this eye the patient could count fingers at three feet, and read large characters without glasses. The field of vision was perfect. From the state of the eyes and the absence of any motive, no ophthalmoscopic investigation or accurate testing of vision had previously taken place, and it is, therefore, possible that the opacities in the vitreous were of older date than the present affection, although their complete absence from the other eye supports an opposite conclusion. The patient had been able to count figures at three feet by the light of a candle, so that there was no marked diminution of acuity. There being no indication for active treatment, the patient was only sent to bed in a dark room, and ordered to guard her eye carefully from all excitation. In the evening her state remained unchanged.

On the 6th, in the morning, there was a manifest increase in the ocular tension, which, by evening, was = — T^2, and the blood in the anterior chamber had disappeared. The patient declared that she saw

clearly, and counted fingers at three feet. The field of vision was intact. On the 7th the globe was still more firm. On the 8th it had returned to its natural consistence, and the ophthalmoscope showed absolutely nothing abnormal.

On the 9th the same eye had again become soft, falling to — T^2. After the visit on the previous evening the patient had a sensation of pricking in the globe, and also slight ciliary neuralgia, but these were of short duration. To day she complains of seeing occasional sparks, and there is some degree of lacrymation. She feels again the sensation of pressure which ushered in the first attack. There is no hæmorrhage into the anterior chamber, no trace of detachment of the retina, and the vitreous is not more opaque. Fingers are counted at two feet, and the field of vision is intact.

On the 10th the tension was somewhat increased in the morning, and still more by the evening. The subjective luminous sensations were less marked than yesterday. On the 11th the tension had again risen; the lachrymation and the luminous sensations had ceased. On the 12th the tension was normal. On the 16th it had again fallen to — T^2. On the 17th, in the morning, the tension had risen, and by evening it was normal. During this attack there was no other sensation than slight pressure within the eye, and no external sign of irritation. From the 16th to the 23rd the tension remained normal, but on the evening of the latter day it had fallen to — T^3, and so remained until the 27th, when, in the evening, there was found to be a slight increase. On the 28th it had risen to — T^1, and on the 30th had again fallen to — T^3. On the 31st, in the morning, the globe was a little harder, and in the evening the tension was again normal. The last two attacks were attended only by slight diffused redness of the sclerotic and by a sensation of moderate pressure.

On the 4th of August the tension was still normal, and the circumstances of the patient rendered it necessary that she should return home. Her acuteness of vision was exactly the same in both eyes. At 14′ she read No. 40 Snellen with lenses of $\frac{1}{4}$, and with lenses of $\frac{2}{3}$ she read No. 5 Jäger at 7″. In the left eye the opacities in the vitreous were less numerous, and the fundus was normal. The imperfect acuity of vision of this eye depends upon the opacities, and partly upon a very fine secondary web which occupied part of the area of the pupil. The acuity of the right eye corresponded with a secondary cataract still more pronounced. In this eye the wound had healed by the first intention.

Shortly after the departure of the patient a letter was received from her husband, who said—'A fortnight after her return her eye became worse than it had ever been at Berlin; she said that it felt ready to burst, tears flowed in abundance, and the eye was completely soft. She remained quietly in bed, became better, and at last all was as before."

It was a remarkable feature of this case that the considerable reduction of tension was attended by no change of form. In the two cases previously recorded there was wrinkling of the membrane of Descemet, with corresponding diminution of the acuity of vision and

marked flattening by the recti muscles. In the present instance there was nothing of the kind. The cornea retained its natural brilliancy; and, although pressure on the globe produced a depression, this became completely effaced when the pressure was removed. Neuralgic pains were a dominant symptom in the case reported by von Graefe. In this, during the five attacks that occurred in the hospital, pain was only once noted, and then did not exceed a slight ciliary neuralgia.

It is worthy of notice that the only sensation constantly experienced by the patient was one of *pressure*, as if the globe had been distended. This feeling may, perhaps, be explained by the pressure upon the ciliary nerves of the engorged choroidal vessels, in consequence of the hyperæmia *ex vacuo* which must have existed. The effusion of blood into the anterior chamber on the first occasion must have been caused by a sudden hyperæmia *ex vacuo*, and probably proceeded from one of the vessels of the iris.

It is not easy to discover the cause of these variations in the intra-ocular tension. We may suggest that some disturbance of nerve plays a chief part in their production, but the nature of this disturbance cannot be ascertained. The effect cannot be due to reflex irritation of the trifacial, since Donders, and more recently Hippel and Grünhagen, have shown that irritation of this nerve increases tension. The last-named authors have also established that irritation of the sympathetic is followed by diminished tension. But still, unless we admit a primitive central irritation of the sympathetic, we have made but little advance, for we cannot conceive how a reflex action can be transmitted from one to the other, or, at least, the existence of such a reflex action has never been demonstrated. Even if we had discovered the nature of the nervous disturbance, it would still be difficult to explain the changes in the vitreous body. One can scarcely understand how a large quantity of a gelatinous substance of this character can be so quickly absorbed or reproduced as to modify suddenly the consistence of the eye. If, however, in place of vitreous of normal consistence, we have a very fluid humour, a serous exudation subject to all the vicissitudes of secretion and absorption, it becomes more easy to understand how, enclosed within a membrane so vascular as the choroid, very rapid changes may be produced. Such must have been the case with the patient in question. Dr. Gouvéa has shown, and Prof. Iwanoff has confirmed, that in all cases of extraction of cataract attended by considerable loss of vitreous the hyaloid membrane becomes detached from the retina, and the resulting space filled by a serous exudation, the vitreous itself never being regenerated. In this patient there had been considerable loss of vitreous during the operation, and it may be surmised that detachment and exudation had taken place. In this way many of the symptoms may be readily explained. Detachment of the vitreous may also occur idiopathically, and, indeed, is not rare, neither is it incompatible with very satisfactory vision. It is, therefore, not improbable that the two cases of a like kind, previously recorded, were produced in a similar manner.

The resources of the ophthalmic surgeon have been enlarged by a few improvements in instruments. Messrs. Weiss have devised a very

useful stop speculum, which is so shaped as to give the operator free access to every part of the eyeball. MM. Robert et Collin* have introduced an improved form of Huerteloup's leech, and a new strabometer. The cutting portion of the leech is fitted with a sort of piston, having a ring for the thumb, and with two lateral rings, like those of a syringe, for the index and medius. The rotation of the blade is effected by simple pressure of the thumb; and two blades are supplied, one of which makes the ordinary circular, the other a semi-circular incision. The stem of the piston is furnished with a screw, for the admission of air, when it is desired to remove the cylinder.

The strabometer consists of a light transverse bar, graduated in millimètres from a central zero, and furnished above with a handle, and below with a little saddle to rest on the nose. On this bar two vertical needles travel from the centre to the extremities, and are of sufficient length to descend to the margin of the lower lid. They are moved by screws at the extremities of the bar. To use the instrument, the bar is placed horizontally, with its zero upon the centre of the nose, and each needle is so moved as to bisect its corresponding pupil. The degree of strabismus is then read off from the graduation. Dr. Liebreich has invented a pair of iris forceps that open in such a manner that they can be introduced through a small wound, and will yet expand fully within the anterior chamber. They have been described and figured in nearly all ophthalmic journals, and may be obtained in England of Messrs. Weiss.

(c) *Medicine.*

In ophthalmic medicine no important advances have been made.

Dr. Morand† records an interesting case of retinitis and hemiopia of the right eye, produced by the continued use of an imperfect Chassepôt rifle, which discharged gas at its vent. The result of treatment is not stated.

Dr. Daguenet‡ has written upon the diagnosis of alcoholic amblyopia. He states that the dimness of vision usually shows itself in a marked degree quite suddenly—so as to be distinguished from the amblyopia of nerve atrophy, which comes on by imperceptible degrees. There is also defect of colour vision, sometimes producing incapacity to distinguish gold from silver coins; and sometimes there will be strange appearances of movement in stationary objects. These symptoms, coupled with others of a more general character, and indicative of alcoholism, will usually clear up the diagnosis. The treatment consists in abstinence from alcohol; in the use, when indicated, of blisters, dry cupping, and cold baths; and in the administration of bromide of potassium, with iron and quinine.

An epidemic of hemeralopia at Strasburg has been described by Poncet,§ who states that the disease is perfectly recognisable by the ophthalmoscope. The retinal arteries are small and pale, the veins dark, tortuous, and dilated, the papilla is congested, and this condition

* 'Annales d'Oculistique,' 1869, i, p. 168.
† 'Rec. et Mém. de Méd. et de Chir. Militaires,' 1869, 22, p. 60.
‡ 'Annales d'Oculistique,' 1869, ii, p. 136.
§ 'Gaz. Hebdom.,' 1869, No. 29, p. 456.

is followed by some œdema of the retina around the disc. The essential phenomenon is the arterial anæmia, and vision is restored as soon as the arteries return to their normal calibre, although the peri-papillary œdema may still exist. The author has tried various plans of treatment without success, but has relieved some very obstinate cases by the continuous galvanic current. Coindet* remarks on the foregoing communication that there are two forms of hemeralopia, the sthenic, and the anæmic; the former, which is rare, quickly yielding to purgatives or other revulsives; the latter requiring an opposite treatment, and often relieved by the application of solid nitrate of silver to the circumcorneal zone of conjunctiva. Galezowski† regards the arterial anæmia as an effect of spasm of these vessels, and has prescribed collyria of calabarine with good effect. He denies the efficacy of cod-liver oil and of fumigations with burnt livers; while Dr. Baizeau, in a subsequent number of the same journal,‡ asserts it. Galezowski speaks also of pretended hemeralopia among soldiers, and states that confinement in a dark chamber is the best remedy.

Under the name of partial temporary amaurosis, Förster§ brought before the Heidelberg Congress a paper descriptive of cases of a curious affection, in which partial loss of vision is followed by an appearance of a zigzag coloured and scintillating bow or arch, which enlarges to the limits of the field and then disappears, leaving the vision normal. The attacks recur at uncertain intervals, and are often followed by intense headache. Many eminent persons have suffered from this disorder, and among others the names of Wollaston, Brewster, Clery, Listing, Ruete, and Czermak, are mentioned by the author. The attacks appear to be of cerebral origin, and are usually preceded by over-work or definite malaise. The affection has also been described by Dr. Hubert Airy‖ under the name of trichopsia, from the fancied resemblance of the zigzag arch to the angles of a fortified town wall. Dr. H. Airy is himself a sufferer; and he gives illustrations of the appearances in his own case. He adds the names of Arago, Herschel, Dufour, and Wheatstone to the list given above.

Dr. A. Sichel, fils,¶ recounts the further history of the patient with retinal anæsthesia, whose state had previously been described by v. Graefe as Case 7, in his "Observations on Amblyopia and Amaurosis," published in the 'Klinische Monatsblätter' for 1866. He describes also another case of a similar kind.

Leber read before the Heidelberg Congress a paper on the anomalies of colour vision in amblyopia.** For the purpose of roughly testing colour vision, he gives his patients small squares of variously tinted paper, and desires them to sort these squares. For more exact testing he employs the chromatometer of Rose. This consists of two Nicol's prisms, a plate of quartz, and a doubly refracting prism. It, therefore, affords two images the tints of which are complementary, and which can be made to vary through every degree of intensity and of tone by

* 'Gaz. Hebdom.,' 1869, No. 29, p. 471.
† 'Gaz. des Hôp.,' 1869, Oct. 23.
‡ December 2.
§ 'Klinische Monatsblätter,' 1869.
‖ 'Philosophical Transactions,' 1870, p. 247.
¶ 'Ann. d'Oculist.,' 1870, p. 202.
** 'Klinische Monatsblätter,' 1869.

simple rotation of the prisms. He has at present done little more than pave the way for a more complete knowledge of the value of aberration of the function of chromatic vision. The paper affords, however, a curious example of German love of appropriation. The undulatory theory of light was suggested, and the foundations of our knowledge of colour vision were laid, by Dr. Thomas Young, whose genius and works have been made the subject of merited eulogium by Helmholtz. Since then, Helmholtz's countrymen have omitted the Thomas, and have turned the surname into JUNG!

The means of diagnosis in retinal disease and amblyopia have been improved by the introduction of Professor Förster's perimeter, for accurately and quickly mapping out the field of vision. A thesis giving a good account of the instrument and its use has been published by Moser.*

Iwanoff brought before the Heidelberg Conference† a paper on disseminated choroiditis. He states that the familiar ophthalmoscopic appearances thus denoted may be produced by four classes of changes, between which there is nothing in common but the integrity of the inner layers of the retina, which, in interstitial retinitis, are the chief seats of morbid action. The author describes two varieties of the so-called choroiditis that are truly choroidal, but only one of which is inflammatory in its character, and two which depend upon changes in the external layers of the retina.

Cases of isolated rupture of the choroid have been related by Knapp.‡ He is of opinion that rupture is not necessarily attended by hæmorrhage; and that it is ophthalmoscopically shown by the presence of a crescentic patch of choroidal atrophy at a point removed from the nerve. By other writers these patches, when following injury and attended by no history of intra-ocular bleeding, have usually been regarded as the result of wasting from the effects of a tension that stopped short of rending force.

(*d*) *Ophthalmoscopy.*

Dr. Loring § says that the explanation hitherto given of the central light-streak of the retinal vessels, and which has been generally accepted as it is stated by Jaeger, is that it is the effect of reflection from the column of blood in the vessel. He, however, maintains that he has proved, by means of a simple apparatus, consisting of a glass tube filled with red fluid, placed at the bottom of a box, that the light-streak does not come by reflection from the column of fluid itself, but by reflection from the surface behind the tube, transmitted through the fluid, and varying as the surface behind the tube has greater or less reflecting property, is more or less intense in colour, or is wanting. The apparatus imitates sufficiently well the conditions which exist in the fundus oculi, and appears to prove the position of the author.

The absence of the light-streak in the choroidal vessels is stated by

* 'Das Perimeter und seine Anwendung,' von Dr. Carl Moser, Breslau, 1869.
† 'Klinische Monatsblätter,' 1869.
‡ 'Archives of Ophthalmology and Otology.'
§ 'Trans. Am. Oph. Soc.,' 1870, pp. 122—128.

Jaeger to be due to the greater thickness of the walls of these vessels, by which their transparency is so much abated that they become visible as opaque objects in their entire diameter. This explanation agrees equally with Dr. Loring's explanation, it being conceded that the walls of the retinal vessels are so thin as to be practically transparent. It is readily understood that where the blood is very dark the reflex must be diminished, although perhaps not abolished; hence the fainter streak seen in the retinal veins.

It is necessary to record a few variations in the form of old ophthalmoscopes, or attempts at the construction of new ones; in both cases chiefly with a view to obtain improvements in demonstrating instruments, or a greater enlargement of the details of the image. Dr. Poncet* has contrived a small and portable ophthalmoscope that forms its own dark chamber, so that it can be used in a lighted room. It is made by MM. Nachet. Dr. Wecker has contrived a new demonstrating ophthalmoscope, which was exhibited at Heidelberg in 1869, and has since been described.† In conjunction with Dr. Roger,‡ Wecker has also arranged an ophthalmoscope having two prisms behind its objective, so placed that two inverted images are produced, and that one of them can be seen by each of two observers at the same time. Javal§ has introduced an ophthalmoscope on the general principle of that of Helmholtz, but with a single plate of slightly platinized glass, and with a small opera glass in place of the concave lens. The opera glass admits of adjustment, and the instrument becomes also an optometer. Dr. Burke, late *chef de clinique* to Dr. Wecker, has fitted up an arrangement resembling that of Klaunig, but substituting two concave mirrors, one of which has a central perforation, for Klaunig's silvered convex lenses; and in this way he has obtained an instrument of hitherto unapproached excellence, both as regards enlargement and illumination. Finally, de Montméja has contrived a fixed ophthalmoscope of great simplicity and cheapness, which seems to unite many of the advantages of Liebreich's and Follin's instruments, and to be free from some of their defects.‖

Dr. Maurice Perrin¶ describes his artificial eye, intended to facilitate the acquirement of the art of ophthalmoscopic investigation. It consists of a brass globe the size of an eyeball, having an aperture for a picture at the back and an aperture for a lens in front. The picture is painted on a cup-shaped disc of copper, and can be changed at pleasure, so as to represent a normal eye, or any diseased condition. The lenses supplied are three in number. One marked E, M, is mounted in rather a long tube. When screwed home, its focal length is the length of the axis of the eyeball, and the eye is emmetropic. By partially unscrewing it, any desired degree of myopia may be produced. A second lens, marked H, is of lower power; and, when screwed home, leaves the eye hypermetropic. A third is cylindrical, and renders the

* 'Gaz. Hebdom.,' 1869, Août, p. 501.

† 'Klinische Monatsblätter,' 1869.

‡ 'Bull. de l'Acad. des Sciences,' 4 Avril, 1870.

§ 'Gazette Hebdom.,' 1870, p. 278.

‖ Made by Dutrou, Paris, for fifty francs; described in 'Pathologie Iconographique du fond de l'Œil,' par A. de Montméja,' Paris, 1870.

¶ 'Annales d'Oculistique,' 1869, i, p. 163.

eye astigmatic. These lenses are of aperture corresponding to the size of the pupil when dilated to the fullest extent; and they are provided with stops, in which the apertures correspond to a medium and a small pupil respectively. The artificial eye is mounted on an upright stem, with a foot, and made to slide to any required height; and a branch from this stem carries a small blackened screen, intended to show the position of the image of the flame. The whole is made by Nachet et fils; and, together with a series of twelve pictures, is supplied by them for fifty francs. The copper cups for additional pictures are supplied at twenty-five centimes each, and, prepared with a simple red ground, at one franc.*

Dr. Maurice Perrin and M. Mascart† have contrived what they call a new optometer. It consists of a tube, carrying at one end a test object, etched transparently on blackened glass, and at the other end a convex ocular lens. Within the tube a concave lens, of shorter focal length than the ocular, traverses to and fro, and the combination allows the eye to receive rays of any degree of divergence or convergence. The indicated degrees of myopia or hypermetropia are marked on the tube, so as to be read off at a glance. The test object may be either fine characters, or concentric lines, or lines for the determination of astigmatism.

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Iris.—Passavant, "Letter to v. Graefe on a Method of Corelysis," 'Arch. f. O.,' xv, Abth. 1, p. 259; Arlt, F., jun., "On the Time required for Movements of the Iris," ib., p. 294; Saemisch, "On Coloboma Oculi," ib., Abth. 3, p. 276; Haase, "On the Pathological Anatomy of Coloboma,' ib., xvi, Apth. 1, p. 113; Kugel, "On the Influence of the Lens on the Tension of the Iris,' 328; Pomier, 'On Iridectomy,' 8vo, Paris, 1870; Lebrun, 'Foreign Body in the Iris," 'Ann. d'Oculist,' lxiv, p. 137.

Vitreous.—Gouvéa, "Results of Experiments on Detachment of Vitreous subsequent to its escape," 'Arch. f. O.,' xv, Abth. 1, p. 244; Stilling, "An Inquiry into the Structure of the Vitreous," ib., Abth. 3, p. 299.

Retina and Optic Nerve.—Landesberg, "Contribution to the Treatment of Detached Retina," 'Arch. f. O.,' xv, Abth. 1, p. 195; "Embolia of Retina, followed by Embolia of the Artery of the Fissure of Sylvius," ib., p. 214; "Pigmentation of Retina after Retino-choroiditis, with Restoration of Normal Vision," ib., p. 220; Pagenstecher, Herrmann, "Case of Injury to the Optic Nerve, with Laceration of the Central Vessels," ib., p. 223; Woinow, "On Vision with the Blind-spot and its Vicinity," ib., Abth. 2, p. 155; Schmidt, Herrmann, "On Optic Neuritis in Brain Disease," ib., p. 193; Leber, "On Pigmentary Retinitis and Congenitial Amaurosis," ib., Abth 3, p. 1; "On Perversions of the Sense of Colour in Diseases of the Eyes," ib., p. 26; Schmidt and Wegner, "On the Similarity of the Neuro-retinitis in Brain Tumour and Bright's Disease," ib., p. 253; Manz, "Experimental Investigations into Diseases of the Optic Nerve consequent upon Brain Lesions," ib., xvi, Abth. 1, p. 265; Kugel, "On a Simple

* It would be difficult to over-estimate the value of this instrument as a means of teaching the use of the ophthalmoscope to students. It would be improved by the addition of a mask to represent the face, and to afford a resting place for the finger in the examination of the inverted image.—R. B. C.

† 'Annales d'Oculistique,' 1869, ii, p. 5.

Method of Detecting Simulated Monocular Amaurosis or Amblyopia," ib., p. 343; Knapp, "Embolism of a Brauch of the Retinal Artery, with Hæmorrhagic Infarctus in the Retina," 'Arch. of Ophth. and Ot.,' p. 64; Talko, "Case of Detachment of the Retina," 'Ann. d'Oculist.,' lxii, p. 17; Gayet and Fontan, "Double Retinal Hyperæsthesia, cured by Water Treatment," 'Lyon Médical,' Dec. 5, 1869.

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Glaucoma.—Landesberg, "Glaucoma following a Graze; Peculiar Limitation of Field of Vision," 'Arch. f. O.,' xv, Abth. 1, p. 204; Hippel and Grünhagen, "On the Influence of the Nerves on Intra-ocular Pressure," ib., p. 265, and xvi, Abth. 1, p. 27 Le Gad, "Consideration on the Nature and Treatment of Glaucoma," 4to, Strasbourg, 1869.

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Strabismus.—Graefe, Prof. Alfred, "On an apparent Perversion of the Law of Concomitant Deviation in certain forms of Anisometropia," 'Arch. f. O.,' xvi, Abth. 1, p. 104; Classen, "On Resistance to Single Vision after the operation for Internal Squint," ib., p. 123; Liebreich, R., "A Modification of the Advancement of the Muscle," 'Arch. of Ophth. and Ot.,' p. 25.

Tumours.—Berthold, "On the Pathologico-anatomical Changes in the Media and Membranes of the Eye in Intra-ocular Tumours," 'Arch. f. O.,' xv, Abth. 1, 159; Hjort and Heiberg, "On the Malignity of Glioma," ib., p. 184; Landesberg, "Choroidal Sarcoma," ib., p. 210; Heymann and Fiedler, "Case of Retinal Glioma, with numerous Metastases," ib., Abth. 2, p. 173; Hirschberg and Happe, "On some Rare Forms of Ocular Tumour," ib., xvi, Abth. 1, p. 296; Lebrun, "Case of Epithelioma of the Eyeball," 'Ann. d'Oculist.,' lxiv, p. 132; "Dermoid Tumour of the Eyeball," ib., p. 135; Graefe, Alfred, "Two Cases of Intraocular Tumour," 'Klin. Monatsbl.,' 1869.

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REPORT

ON

MIDWIFERY AND THE DISEASES OF WOMEN AND CHILDREN.

BY

ROBERT BARNES, M.D., F.R.C.P.

I. GYNÆCOLOGY, EMBRACING THE PHYSIOLOGY AND PATHOLOGY OF THE NON-PREGNANT STATE.

Anomalies of Structure.

Bifidity of the uterus is illustrated by Dr. Schatz, who describes and figures four new cases of incomplete division of the genital canal in women, and three of one-horned uterus ('Arch. f. Gynäk.,' 1870). By Dr. Bailly's case of bifid uterus. The patient died in the service of M. Depaul at the Clinique. The placenta had adhered partly to the septum between the two uterine cavities. This septum being unable to contract, like the normal uterine walls, was, M. Bailly thought, the cause of the hæmorrhages ('Bull. de la Soc. Anat.,' 1867).

A case of *bilocular uterus*, diagnosed during life, is related by Dr. Routh ('Obstetr. Trans.,' 1870). The subject menstruated at 15½ years. She suffered a sudden and severe attack of vomiting and pain during a period. The diagnosis was made by the sound, which tracked the two uteri in different directions.

Another case is related by Dr. Rogers (op. cit.). The vagina, as well as the uterus, was separated by a septum. A sound was passed into each uterine cavity, when the two sounds were found not to touch, having the septum between them.

Absence of vagina, retention of menses. Dr. Routh relates ('Obstetrical Transactions,' vol. xii) an interesting case of a well-developed girl, æt. 14, who began to menstruate at 13. Every five weeks she had violent pelvic pain. There was no vagina, but a sort of cæcum. *Per anum* the finger came across a tumour the size of a child's head, fluctuating, in one part apparently *very thin*. A sound in bladder and finger in rectum, the intermediate membrane appeared about one eighth of an inch thick; it was supposed to be made up of the floor of the

bladder and superior wall of the rectum, with very little vaginal tissue. An attempt was first made to open up a new vagina; through this the uterus was punctured by a trocar; a very thick dark crimson fluid exuded very slowly, its exit was helped by injecting a weak solution of iodine. Great sickness, due to the chloroform, followed. The patient proceeded fairly for six days, but on the seventh, apparently under the influence of mental agitation, she felt "as if something had turned completely in her inside;" pulse rose to 160. Vomiting occurred, delirium, evident internal injury and shock, under which she sank.

Autopsy.—Slight adhesions of omentum. On lifting up omentum a quantity of chocolate-coloured grumous fluid spouted up from beneath the intestines; it came from the utero-rectal pouch. The uterus was enlarged. Both Fallopian tubes were dilated, that on the left side to about the size of a pigeon's egg, full of fluid, which could not be squeezed back into the uterus. The dilatation in the right tube was sloughy looking and perforated on its inner side; it was about the size of a small orange. From the aperture in it, which admitted a sound readily, a quantity of the same kind of grumous fluid as that found in the abdomen could be found exuding. The meatus urinarius was found in this case widely dilated (a condition to which Dr. Oldham has drawn attention as one often associated with absence of vagina).

A case of incontinence of urine; nearly complete occlusion of the introitus vaginæ by cicatricial degeneration; assumption of the function of the vagina by the urethra; operation; complete healing. By Uterhart ('Berlin. klin. Wochensch.,' 1869).

Dr. Pallen relates a case of *absence of vagina*, in which three operations ended in the establishment of menstruation. A girl, aged 20, had since 14 experienced menstrual molimina without any show of menses. Her health failed. On examination it was at first thought there was retention of menstrual fluid from imperforate hymen. But it was found that there was no vagina, a small undeveloped uterus, and no accumulation. An artificial vagina was made by incision and laceration by the finger, and maintained by wearing a glass plug and Barnes' dilators. A periodical flow of blood was established, and good health was regained. The case, Dr. Pallen says, is unique, the recorded cases of absence of vagina differing in some respects. ('St. Louis Med. and Surg. Journ.,' 1870.)

Atresia of the vagina is illustrated by Prof. Halbertsma, who relates a very instructive case of *retention of menses* from this condition. The uterus had been enlarging for ten years, from the blood accumulated within its cavity, so that the fundus reached a hand's breadth above the umbilicus. He formed the opinion that rupture of one of the distended Fallopian tubes was impending. He punctured the uterus with an exploring trocar. The tension was thus relieved, and it is believed that the rupture of the tubes, which so often attends rapid emptying of the uterus, was prevented. ('Centrabl. f. d. Med. Wissensch.,' 1870.)

Imperforate hymen.—A case is given by Dr. G. Conradi ('Med. Times and Gaz.,' 1869), in which the closure seemed to be caused by scarlatina. A girl at 13 had scarlatina; at 14 she complained of pains in the lower part of the back; at 16 the pains increased in severity, and she rather

suddenly experienced a sensation as if something burst from the interior towards the genital organs. This feeling increased, and with it a frequent desire to pass urine. The vagina was found occluded by a bluish membrane; fluctuation was felt in it, and also by rectum. The membrane was punctured, and thirty-two ounces of fluid escaped. The opening in the hymen was maintained by a tent. Menstruation was established.

Dr. Perrin relates two cases of imperforate hymen with menstrual retention. Both were relieved by simple incision of the hymen. Charrier at the same time related a case in which incision of the hymen was followed by escape of a white, half-fluid mucus only. Examination revealed, a short distance above the hymen, a hard muscular diaphragm, which he punctured with a trocar. A little blood flowed. Puncture was then made above the pubes, when black, fluid, odourless blood flowed. This was only palliative. The abdomen remained of the size of seven months' pregnancy. Maisonneuve then punctured by vagina, this time with better result; the opening was maintained for several months, and chlorine washings were used every day on account of the offensive smell. Menstruation returned, and the patient recovered. ('Arch. Gén. de Méd.')

Dr. Horatio Yates, of Kingston, Canada, relates a case in which the hymen was as thick as buckskin and as firm as parchment. On incision 42 ounces flowed. She recovered favorably. A point in connection with the case is that the patient's sister died apparently of peritonitis from menstrual retention, and that two daughters of the patient's brother also had imperforate hymen. Dr. Yates asks, is this malformation ever hereditary? ('Lancet,' 1870.)

Dr. M'Clintock describes a form of *contraction of the vagina* which takes place after the menstrual epoch. There takes place a progressive diminution of the calibre of the vagina, not throughout its entire extent, but commencing at its summit, and slowly advancing downwards. When the contraction has reached the level of the os tincæ, the introduction of the finger into the vaginal cul-de-sac around the cervix becomes quite impossible, this part being so closely embraced by the ribbon-like structure. With the persistent increase of the constriction the os and cervix become quite encapsulated and beyond the reach of touch or sight. The condition is quite distinct from malignant disease or cicatricial process. It occurs in old women. ('Dubl. Quart. Journ. of Med.,' Aug. 1870.)

Professor E. Martin describes a condition of the vagina which is observed under particular circumstances. It consists in a temporary dilatation of the fundus, not the result of stretching or distension, but which is caused by a pathological action of the neighbouring ligaments, that is, the pubo-vesico-uterine, and the sacro-uterine, the muscular bundles of which contract. The examining finger finds the roof of the vagina so wide that it seems as if its walls were applied close to the sides of the pelvis. This condition is found when there is hæmorrhage with uterine colic, and in secondary puerperal hæmorrhage. In such cases the os uteri is open, and the roof of the vagina seems higher than usual. Under the use of means to arrest the bleeding this dilatation disappears completely in twenty-four hours. Dr. v. Haselberg says,

speaking on the subject, the dilatation takes place under the effort of the uterus to empty itself. ('Monats. f. Geb.,' 1869.)

Diseases of the Uterus proper.

Dr. Routh describes *fundal endometritis*, distinguishing this condition from inflammation of the body of the uterus. The symptoms grouped by Gooch as marking the "irritable uterus" are those which Routh says are due to inflammation of the fundus uteri. He says he has met with four forms—convulsive, obstructive, chronic, and acute. Convulsive affections do not occur when the disease is confined to the body. Fundal endometritis is diagnosed from inflammation of the body by the pain which is felt in the first, when the fundus is pressed upon above the symphysis. He narrates cases in which mania attended the disease. The main treatment recommended is local depletion. ('Obstetr. Trans.,' 1870.)

Dr. Whiteford relates a case of *removal of an imbedded uterine fibroid.* The patient was nearly exhausted by hæmorrhages. Dr. Whiteford dilated the cervix by incisions and tents, then made an incision into the tumour, which projected from the anterior wall of the uterus. After some days, when the tumour had been a little driven down, it was seized by vulsella and dragged out, this operation lasting about two hours. The patient made a good recovery. ('Edin. Med. Journ.,' Feb. 1870.)

Prof. Martin relates ('Mon. f. Geburtsk.,' 1869) a case in which he *extirpated a myoma of the uterus by abdominal section.* The tumour was large, had grown quickly, was causing dysuria and œdema of the feet; the patient insisted upon having relief. Her circumference measured 44″. The uterine sound ran about 3″. The body of uterus was movable in relation to the tumour, which was the size of a man's head. An incision was made along the linea alba; adhesions to the tumour were cut through. The tumour was attached by a stalk the size of a thumb to the fundus uteri. A clamp was applied to it, and it was cut close. In the evening the patient complained suddenly of vertigo and sickness; the abdomen swelled; she died under symptoms of internal hæmorrhage. The tumour weighed about 12¾ lb. Autopsy revealed hyperplasia and neoplasmata of the uterus, chronic peritonitis and perimetritis, dropsy of the Fallopian tubes, and lymphectasia. More than three quarts of recent blood mixed with coagula were found in the abdominal cavity.

Dr. Höning relates a case of *a large fibrous polypus growing from the lower wall of the urethra.* A woman aged 41 suffered from dysuria and bowel obstruction. A tumour the size of the fist projected from the genitals; it sprang from the left side of the urethra; the meatus was an opening an inch long. A still larger tumour was contained in the vagina. Both being turned out of the vagina, were removed by scissors. Actual cautery was applied to stop profuse bleeding. The mass was a soft fibroid, weighing three pounds. The patient recovered. ('Berlin. klin. Wochnsch.,' 1869.)

Dr. Willoughby relates a case of diseased *uterus of tubercular* character. A woman, æt. 35, mother of several children, had pulmonary tubercle and died of tubercular pleurisy and peritonitis. She had not menstruated for years. The pelvic peritoneum was beset with cheesy masses, one of which, the size of a walnut, was beneath the peritoneum; this mass had produced *rectangular anteflexion* of the uterine cavity. The Fallopian tubes were here immensely distended with the same cheesy looking substance, and curiously convoluted; the fimbriated extremities were entirely obliterated by coalescence with the ovaries. These organs were as large as walnuts, filled with the same cheesy material, and one contained an effusion or hæmatocele. No tubercular deposit was apparent in the lining membrane of the uterine cavity. ('Pathological Transactions,' 1869.)

On some forms of enlargement of the uterus. Dr. Atthill ('Dubl. Quart. Journ. of Med.,' 1871).

A case in which *true hydatids* were expelled from the uterus is related by Dr. Graily Hewitt ('Obstet. Trans.,' 1870). The patient was thirty-five years old. The uterus was enlarged to the size of a fist. Characteristic echinococcus heads were observed. The hydatids passed varied in size from a pea to a gooseberry.

In a very important clinical memoir on *cancer of the uterus* Mr. Henry Arnott gives the conclusions drawn from the observation of fifty-eight autopsies made in the Middlesex Hospital. The most common form affecting the uterus is true cancer, the structure ranging from one almost purely cellular to a tissue exactly resembling the firmest portions of a scirrhous breast. Epithelioma is also very frequently met with, in the proportion of nearly three to four. Well-marked sarcoma is to be found affecting the uterus as well as other parts of the body, although it does not seem to have been hitherto looked for in that locality. Outbreaks of the disease in the neighbouring lymphatic glands or in remote viscera are comparatively frequently met with, and furnish a strong argument against rash operative interference. These secondary foci being greatly more common with true cancer and sarcoma than with epithelioma, the microscopic examination of the morbid structure becomes of much importance in determining upon a line of treatment. ('Pathological Transactions,' 1870.)

A woman, æt. 67, was suffering from carcinoma of the uterus. In July Dr. Grub removed by hand a mass of cauliflower-like substance, and drew it out of the uterus, and, cutting it away by scissors from its connections, extirpated it. The following day the woman buried her uterus, using the spade herself. She died on the 3rd September. ('Monatsschr. f. Geburtsk.,' Dec. 1868.)

Dr. Wynn Williams relates ('Obstet. Trans.,' 1870) some cases of *cancer* of the uterus successfully *treated by bromine*. The method employed was to inject about twenty drops of a solution of twelve grains of bromine in a drachm of rectified spirit, by means of a fine syringe, the point of which was made to penetrate about half an inch into the diseased tissue. A slough follows. The injection may be repeated if diseased tissue be found remaining. The cases selected of

course were in the early stage, when the disease was limited to th cervix. Hence a doubt may exist as to the correctness of the diagnosi in some of the cases narrated.

A case of *carcinoma of the body of the uterus* was exhibited by Dr Priestley ('Obstet. Trans.,' 1870). The prominent symptoms had bee profuse and irregular hæmorrhages, alternating with abundant water discharges intensely fetid. Death took place with symptoms of sudde collapse. It was found that perforation had taken place through th anterior wall of the uterus.

Carcinoma of the body of the uterus is illustrated by a case show to the Obstetrical Society ('Trans.,' 1870) by Dr. Protheroe Smith The chief symptom was agonising pain; there was also offensive dis charge. The cervix was quite intact.

Dr. Phillips (op. cit.) described another case. The patient was 2 years old. The fundus uteri was converted into a mass of malignan disease, and there was similar disease of both ovaries, but the cervi was quite free. The uterus was movable.

Dr. Gusserow discusses the nature of *sarcoma of the uterus* and it diagnosis from cancer. There are two forms:—1. Hard sarcoma 2. Soft or diffuse sarcoma. Both may present spindle cells and roun cells. They are very rare. He relates a case of each. In the first the patient suffered intense pains; there was no remarkable hæmorrhage but an intermitting discharge of flesh-water-like fluid; the vagina portion was quite intact; the body of uterus was enlarged, and i connection with it was a tumour the size of an apple. This tumou very rapidly increased to the size of a child's head. Peritonitic symp toms and quick prostration set in. The tumour pointed a little belo the navel, where fluctuation was felt. Thinking it was a suppuratin fibroid, it was determined to puncture, but in the meanwhile spontaneou perforation occurred. Fluid fæces came from the opening, with pus The patient died next day. The uterine cavity was filled with pus an fæces. The intestine adhered to the tumour and a communication ha been established. Uterus enlarged. The tumour consisted of ver uniform structure, sarcoma with spindle and round cells, the first pre dominating. ('Arch. f. Gynäkologie,' 1870.)

Displacements of the Uterus.

M. Panas has examined the *direction of the uterus* in 114 women a the Lourcine who were not affected with uterine disease. He foun the uterus quite straight in 44, anteflexions in 40, anteversions in 12 retroflexions in 3, retroversions in 3, lateriversions in 12. ('Arch. Gén de Méd.,' March, 1869.)

Retroflexion.—Dr. Hall Davis relates a case in which retroflexion o the uterus was caused by lifting a heavy weight. It was successfull treated by keeping the bowels clear, by restoring the uterus to it normal position by the sound, keeping the patient prone on her stomach and cold-water injections. ('Lancet,' 1869.)

Dr. Byrne's case of cure of *retroversion and prolapsus* of the uteru by operation is interesting. The subject had a child at seventeen

Soon after she complained of great dysuria and bearing-down. Complete prolapsus ensued. At the end of eighteen years she came under treatment. The tumour was returned within the pelvis. A bag was passed into the rectum and inflated so as to raise the fundus uteri, whilst a tenaculum seized the hypertrophied anterior lip of the uterus, and by this double action the uterus was restored to its normal position. It was found that when the anterior vaginal wall was firmly seized by a hooked forceps, and if at the same time, by a sound in the cavity of the uterus, efforts were made to produce retroversion, no amount of force compatible with the integrity of the tissues could succeed in doing so; but when the forceps was removed, and the tension on the vesico-vaginal septum thus removed, there was not the slightest difficulty in producing retroversion. An operation similar to that practised by Sims for cystocele and prolapsus uteri was performed. The anterior wall of the vagina was depressed so as to make two ridges, longitudinally extending from the meatus urinarius to within half an inch of the os uteri. These ridges were denuded, and the surfaces were brought into apposition by seven interrupted sutures. When the parts had healed, it was found that even by a sound in the uterus retroversion could not be produced. The patient made a good recovery, the retroversion and prolapsus being cured. ('Amer. Journ. of Obstet.,' 1869).

Dr. T. G. Thomas gives the *histories of four cases of chronic inversion of the uterus*, and describes a bold course of treatment. He quotes, first, a case by Dr. Emmet. The uterus had been inverted about six months; there was great anæmia and hectic. Under ether attempt at forcible taxis by pressure on the fundus was made, without much effect. Then Dr. Emmet allowed the fundus to drop into the palm of his hand, and, passing the thumb and fingers around the mass, as high as possible within the cervix, he continued to enlarge the space between the neck and inverted body, by rapidly expanding the fingers as much as possible, at the same time making a steady upward pressure, with a view of returning first the portion last involved. This manœuvre, aided by endeavouring to roll out the inverted portion by the other hand on the abdomen, was successful in effecting considerable dilatation of the cervix, and partial return of the uterus. After three hours and fifty minutes of this manipulation, in which Drs. Emmet, Sabine, Elliott, and Thomas relieved each other, the uterus was completely returned. She recovered and became pregnant.

Case 2.—Inversion of four years' standing. After two unsuccessful attempts at forcible taxis, a Barnes' dilator was placed in the vagina for some hours. This was found to have supported the uterus well. Attempts were then renewed, trying Dr. Noeggerath's plan of pushing in one cornu; considerable hæmorrhage compelled to desist. Next day efforts on the plan described in the preceding case were sustained during nearly three hours, when the uterus was reduced. The woman recovered. During this proceeding Dr. Thomas held a plug of boxwood, with a handle a foot long, forcibly in the cervical ring by the abdominal walls. He believes this mode of exciting counter-pressure is more

effectual than by the fingers in supporting the uterus and in dilating the cervix.

Case 3.—Inversion of 10 months. Dr. Thomas began by putting the patient on the free use of belladonna, directed a stream of water against the inverted uterus three times a day, and placed suppositories of belladonna in the rectum. Under ether he grasped the tumour, so that the fingers surrounded the pedicle; he then pushed the mass steadily upwards against the abdominal wall, where it met the counter-pressure of his left hand. In exactly ten minutes the entire cervix yielded, and the body went up; then seizing the body with the thumb on one horn, and the index finger pressing the other, the horn pressed by the thumb became indented, soon the other horn followed, and in just twenty-five minutes the operation was completed.

Case 4.—Inversion of 21 months. Several attempts at reduction by forcible taxis and by wearing a vaginal air pessary had failed. Dr. Thomas resorted to the belladonna and douche, as in case 3, for a week, but an hour's persistence in the methods narrated, aided by the abdominal plug, resulted in only partially expanding the cervix. A caoutchouc bag was then placed in the vagina, and attempts renewed next day, with no better success. Next the uterus was drawn down, and an incision was made in the tissue of the neck towards the subjacent peritoneum. A free jet of blood followed; many attempts were made to tie the vessel, but failed; the bleeding was at last stopped by stitching the lips of the wound together. A week later the following remarkable proceeding was carried out. The uterus was lifted up so that the operator could feel the cervical ring against the abdominal wall. He then cut down in the median line, as for an exploratory incision in ovariotomy; then he inserted his finger into the uterine sac, and found there was no adhesion. He then inserted a steel dilator made on the principle of a glove-stretcher, into the cervix, and expanded the blades. "The dilatation was easy and rapid," but contraction returned as soon as the dilator was withdrawn. The uterus was drawn down, and one horn pushed in, then the other, and the organ was reduced. The vessel which had bled so profusely a week before burst out again. This was, however, stopped. A finger passed through between the uterus and bladder. The abdominal wound was closed by silver sutures; the vaginal rent was not interfered with. The patient quite recovered. (The proceeding seems a desperate one, but it is better than amputation. It might, however, possibly have been avoided by more systematic application of elastic pressure.—R. B.)

Dr. Miller's paper on inversion is mainly critical. It is a plea for amputation. He discusses the value of Dr. Thomas's operation as compared with amputation. He contends that the loss of the uterus is not so much to be considered, for, the ovaries being preserved, the woman retains her sexual character. He institutes a statistical comparison between the results of amputation and of manipulative measures, and appears to argue that manipulation is necessarily so severe as to show a mortality scarcely inferior to amputation. (He does not notice the reporter's

case in which re-inversion was successfully effected after incising the cervix. The subject of this case is now far advanced in pregnancy, a sexual result which cannot be expected after amputation.—R. B.) ('Richmond and Louisville Med. Journ.,' April, 1870.)

Inversion, chronic.—Dr. Byford relates a case of inversion of the uterus treated by elastic pressure. The placenta was expelled, and, hæmorrhage occurring, the uterus was grasped through the abdominal wall. Bleeding returned, and the uterus enlarged. Grasping it caused contraction again. She was much prostrated, but in twenty days rallied, and then got about. About five weeks after labour, when vomiting, she had tenesmus, and felt something come down, which she replaced, and a physician coming found an inverted uterus. Two months after this Dr. Byford applied a water bag in the vagina. On the fifth day the uterus had returned. The patient quite recovered. ('New York Med. Journ.,' 1870). (The mode of occurrence of the inversion is even more remarkable than the cure. Cases of inversion occurring many days after labour are so rare as to have raised doubts whether there was not error in the observation.—R. B.)

A case of chronic inversion is related by Lawson Tait ('Obstetr Trans.,' 1869). It was reduced, after other means had failed, by sustained elastic pressure. The patient's condition seemed hopeless when the pressure was begun, and she died under symptoms of fibrinous deposit in the heart, forty-eight hours after reduction.

Prolapsus.—A case of *prolapsus uteri*, ending fatally by *dilatation of the ureters*, and *wasting of the kidneys*, is related by Dr. J. J. Phillips ('Obstetr. Trans.,' 1870). He cites West, Goupil, Huguier, Virchow, and Kiwisch, as describing cystitis and hydronephritis as resulting from procidentia. His own case was that of a woman, æt. 35, pluripara, having suffered prolapsus from birth of first child. Micturition had been difficult. The urine contained a large proportion of mucus, and an abundance of pus-globules. She died in a typhoid state, but the characteristic signs of typhoid were wanting. The pelves of the kidneys were much dilated, the tissue very much reduced, the pyramids quite flattened down; the ureters were so distended that the little finger would easily enter them. The whole of the urinary passages was filled with milky looking purulent urine. The walls of the bladder were hypertrophied. The uterus formed a tumour, the size of an apple, outside the vulva. The ureters were found to descend into the bladder, so that their orifices came under the pubic arch along with the fundus of the uterus, and were there subjected to pressure.

Peri-uterine Diseases

are illustrated by the following:

Bernutz gives ('Presse Méd.,' 1870) an excellent memoir on the diagnosis and treatment of *phlegmon of the broad ligament*, distinguishing this from pelvi-peritonitis. Through the connections of the cellular tissues with the pelvis and the uterus the involution of the uterus is arrested. The symptoms are to be divided into two periods; in the first *pain* marks inflammation, then there is a stage of *rest*, then the

second period of *suppuration* comes, to which several complications may arise, as peritonitis.

Pelvic hæmatocele.—Dr. Rockwitz relates a case of retro-uterine hæmatocele, and discusses the theory of Virchow and Schröder, which affirms that the source of the blood is the inflamed peritoneal surface. The case presents the following features:—The usual signs of shock and pain in abdomen set in during profuse menstruation on the 3rd August. On the 9th September the tumour reached above the navel; the rectum was so compressed as to greatly obstruct defecation. Incision was made in the most projecting part of the vagina. A considerable quantity of blood, not mixed with coagula or pus, flowed. On the 13th the discharge became thin and fetid, and was mixed with firm coagula and pus; some hectic. The vagina was washed out with warm water. The tumour was sensibly diminished in size. She quite recovered. The case is a good example of the value of opening the blood-tumour.

Virchow states that the blood usually comes entirely or in part from the new-formed vessels on the peritonitic layers of the abdominal excavation.

Schröder goes further, and says a tumour caused by a collection of blood which can be felt in the vagina can only arise when a cavity is pre-formed for it, that is, when Douglas's sac is first closed above by a partial adhesive peritonitis. He contends, like Virchow, that inflammation is the first event, and the hæmatocele the second; but he also says the blood-tumour is encapsuled, because the space was already converted into a bag by the adhesions.

Rockwitz seems to favour this hypothesis; on the other hand, Dr. Ferber, in a note in the same journal, contends that the idea of a pre-formed cavity is a pure hypothesis, and that the blood-collection often takes place very gradually, *stillatim*, the peritonitis being secondary, and designed to isolate the blood-tumour. (The general history of cases certainly supports the latter view.—R. B.) ('Mon. f. Geb.,' Dec. 1869.)

Dr. Aitkin relates a case of pelvic hæmatocele, the more interesting because a post-mortem examination was made. The patient probably died in consequence of getting about too actively when she ought to have been quiet. On opening the abdomen a large quantity of grumous blood escaped. The intestines were matted together by recent lymph. In the left iliac and hypogastric regions, extending from behind the uterine cervix up nearly to the level of the umbilicus, was a large, tough, partially decolorized blood-clot, weighing thirty-six ounces. The recto-vaginal pouch was filled partly by the apex of this clot, but chiefly by soft puffy lymph, and at the bottom of the pouch was an incision. On the left side, almost completely imbedded in the blood-clot, and close to the line of the incision, was an ovarian tumour, about the size of a closed fist, containing a yellowish, purulent-looking fluid. The uterus was pushed forward, so that the fundus rested on the symphysis. In its interior a quantity of muco-pus was found. No pus or blood in the Fallopian tubes. The case was, therefore, one of intra-peritoneal hæmatocele, complicated with peritonitis. ('Ed. Med. Journ.,' Aug. 1869.)

Dr. Barnes sketches the history and diagnosis of retro-uterine hæmatocele, showing that the diagnosis depends greatly upon the use of the uterine sound. He then, in order to define more clearly the source and significance of the symptoms of pelvic hæmatoceles, divides his clinical observations into five groups. The first contains four cases of rupture of the gravid uterus. In describing these cases he points out that death of the fœtus is an efficient cause of rupture, and that degeneration of uterine tissues is not a necessary factor. The second group contains eight cases, some doubtful, of rupture of tubal-gestation cysts. The third group contains four cases of bursting of a diseased ovary. In all post-mortem examination was made. In one, in a young woman, there was malignant disease of the right ovary. One was a case of axial twisting of an ovarian tumour, under the pressure of the pregnant uterus, resulting in strangulation of the tumour, extravasation of blood, and peritonitis. One was a case of axial twisting of an ovarian tumour without pregnancy. One was a bursting of a diseased ovarian tumour, the blood becoming encapsulated. Group 4 contains two cases of effusion from external violence. Group 5 contains eight cases of effusion consequent on abortion, some of them possibly being cases of rupture of tubal cysts. Group 6 includes eighteen cases connected with menstruation, and others where the antecedent conditions were doubtful. In one case the hæmorrhagic disposition was increased by variola. In two effusion arose at the onset of menstruation, the author thinks from the difficulty of the menstrual blood, in its first rush, in finding free outlet by the uterus and vagina.

He then compares the symptoms of the several groups, shows that effusions from rupture of uterus, of tubal-gestation cysts and diseased ovaries, form a cataclysmic order, in which the shock is often at once crushing, and the blood rarely becomes encysted; whilst in the abortion and menstrual cases, the injury being less severe, the effusion less in quantity and more gradual, the symptoms are less marked, and the blood coagulating is usually encysted by peritoneal inflammation. He shows that one cause of menstrual hæmatocele is obstruction from narrowing of os externum uteri or flexion. His experience is adverse to opening the hæmatocele. ('St. Thomas's Hosp. Rep.,' 1870.)

Dr. Duncan relates a case of a pluripara who had severe *perimetritis* after an abortion, ending in perimetric abscess, leaving the uterus fixed and drawn closely to the left sacro-iliac synchondrosis. Another abortion occurred whilst this state of things remained. When in the second month of a subsequent pregnancy the fixing of the uterus was still felt. As the uterus developed itself it became retroverted, gradually filled the pelvis, and the cervix was drawn close against the symphysis. The uterus was absolutely immovable. About the end of the fourth month the retroverted and adherent uterus became gradually and spontaneously replaced. The fœtal heart was heard until the middle of the sixth month, when the child died. Fully a month after this the membranes burst, and the delivery was completed. The os uteri remained widely open, unnaturally adjacent to the symphysis, and its mobility restricted. Involution was impeded, and two months after labour the uterus had regained some mobility. Two things are specially note-

worthy—the uterus, bound down by adhesions, overcame them, and became developed as far as the seventh month; the adhesions caused retroversion of the gravid womb. ('Edinb. Med. Journ.,' Oct. 1870.)

Dr. Storer contributes a valuable essay on *the rectum in its relations to uterine disease*. Having illustrated the frequency of diseases of the rectum and their bearing on uterine disease, he points out a mode of examination which he thinks superior to those in ordinary use. He deprecates for diagnosis, as well as for treatment, the use of the anal speculum. He says that by everting the rectum by passing the finger within the vagina we are able to explore the rectal cavity far more thoroughly than by any other means, and to apply remedies and perform operations with an ease, safety, and satisfaction that are otherwise impossible. He gives several interesting clinical illustrations of his views and practice. He relates a case in which an ovarian tumour opened into the rectum, and was cured by a fistulous communication; also a case of utero-ovarian fistula. The patient had a large abdomen, and pus escaped from the os uteri. A large male catheter, passed through the os its full length, gave exit to a large hand-basinful of a fetid sanies, with the effect of lessening the abdomen, and allowing the point of the catheter to be felt upon one side of the umbilicus. ('Amer. Journ. of Obstet.,' 1869.)

Dr. J. C. Nott insists upon and illustrates the influence of hæmorrhoids and fissure of the rectum in the production of severe symptoms referred to the uterus ('Amer. Journ. of Obstet.,' 1869).

The Disorders of Menstruation.

Dr. Cholmeley commends the virtues of chloride of ammonium in amenorrhœa and dysmenorrhœa. ('St. Andrew's Medical Graduates' Transactions,' 1870.)

Dr. Mandl discusses the pathology and treatment of *dysmenorrhœa membranacea*. He details a case, and submits the following conclusions: —It is a disease *sui generis;* its pathognomonic feature is the expulsion of a membrane resembling decidua, within and not later than forty-eight hours after the advent of menstruation; occasionally membranes are expelled during extra-menstrual intervals; they are formed in consequence of a chronic inflammation; it leads, after long duration, to retro- and ante-versions, congestions, and, lastly, to marked disturbance of the general health; sterility is observed in all cases; the ætiology is quite unknown; chloride of potassium applied immediately to the uterine mucous membrane seems to be palliative. ('Wien. Med. Presse,' 1869.)

Dr. Gustav Braun communicates a report upon the *treatment of dysmenorrhœa and sterility by bilateral division of the cervix uteri*. To divide the cervical portion he uses Küchenmeister's scissors. He then cuts the os internum uteri and the neighbouring portion by a blunt-ended lancet-shaped knife. On the third day he passes the sound. He keeps the patient in bed for seven or eight days and during the suc-

ceeding menstrual period. Out of 67 cases, the result was favorable in 53; in 11 unknown, in 4 interrupted by subsequent affections of the abdomen. In 11 cases pregnancy followed. In no case did the operation cause any considerable disturbance. ('Wien. Med. Wochenschr.,' 1869.)

The Vagina.

Vaginismus.—Neftel observed ('Centralbl. f. die Med. Wissensch.,' 1868), in three young women, severe vaginismus, the result of using a strong lead cosmetic. When cured of the lead-paralysis the vaginismus yielded.

Ovarian Diseases

are illustrated in the following:

Dr. Schetelig illustrates by three cases some points in the *diagnosis of abdominal tumours*. The first was an enormous hydronephrosis; adhesions were found extending into the pelvis; extirpation by gastrotomy; death. On dissection no trace of left kidney could be found. Discussing Spencer Wells' dicta upon the diagnosis of kidney cysts from ovarian, Schetelig shows that none could distinguish this particular one incision from ovarian. He thinks even exploratory would not have been of much use, since the entire distinction must be founded upon the character of the cyst-contents, and no urine-constituents may be found, whilst paralbumen and cholesterin, which have been considered characteristic of ovarian cysts, may be present. The fact is that in such a cyst the natural function of a kidney is perverted.

In the second case there was unilocular ovarian cyst united with a hæmatoma of the fundus uteri and of the tubes, and extensive adhesions with the small intestines; operation; death.

The third case was a cystomyoma of the right broad ligament with chronic peritonitis. ('Archiv f. Gynäkol.,' 1870.)

Dr. O. Spiegelberg discusses the causes of *perforation of ovarian cysts* into the peritoneal cavity. He relates three cases:—1. Left papillary cystoma with ascites and perforation; exploratory incision; ovariotomy; death. This patient had been tapped several times. The fluid drawn contained paralbumen; clots did not form spontaneously; cholesterin-crystals. Hence escape of contents of cysts into abdominal cavity was diagnosed. Ovariotomy was proceeded with. Dissection showed recent peritonitis, purulent exudation, old intestinal adhesions. 2. Glandular ovarian cystoma with numerous ruptures and escape of gelatinous masses into the peritoneal cavity; diagnostic tapping made; death through recent purulent peritonitis. The tumour was perforated in about thirty places, the apertures varying from the size of a bean to that of a small plate; from all the openings yellow red masses protruded. The chief cyst-wall was very thin. Even the secondary cysts showed perforations. In other respects it was an ordinary glandular cystoma. 3. Glandular cystoma; hæmorrhagic breaking down of the anterior wall; escape into the peritoneal cavity; death by peritonitis.

The causes of perforation, apart from bursting from violence, are fre-

quently a wearing through of the cyst-wall by partial pressure of the growths of a papillary cystoma. The dendritic cauliflower growths springing from any spot advance to the opposite part, and if large, cause perforation by pressure. They may then grow unhindered in the peritoneal space, and sooner or later cause fatal peritonitis. There is no doubt that the so-called papilloma of the abdominal cavity described as arising there are perforated cystomata. Spiegelberg knows no other instance like the second here described. The most frequent cause of perforation of cysts is suppuration, but this seldom leads to opening into the peritoneum; mostly externally or into a neighbouring hollow organ. ('Arch. f. Gynäkol.,' 1870.)

O. Spiegelberg relates a case in which *echinococcus of the left kidney* was mistaken for an ovarian cystoma. A deadened tympanitic sound was made out only above the anterior pelvic wall, as is often the case in ovarian tumour. At the operation both ovaries were found normal. The cyst was divided throughout its length to facilitate removal: one half was traced up to the kidney; twenty-two vessels were tied; death next day. Numerous echinococcus-scolices were found in the fluid. Spiegelberg regrets that exploratory tapping was not practised. ('Archiv f. Gynäkol.,' 1870.)

Prof. Waldeyer describes minutely his investigations into the epithelial ovarian tumours. These are chiefly represented by adenoma, cystoma, and carcinoma. The ovarian cystomas are of two kinds, *myxoid* and *dermoid*. He prefers the term myxoid cystoma to the more usual colloid systoma, because the contents are never pure colloid substance, and also in order to point out more clearly the relations of myxoid and dermoid tumours to each other and to the normal formations of the organism. Whilst the inner surface of the dermoid cystoma shows the character of the outer skin invested with epidermis, the myxoma has exactly the aspect and bearing of a common glandular and vascular mucous membrane, *ex. gr.* of the mucous membrane of the stomach. This Waldeyer proceeds to prove even in detail. He describes the different forms of pedicle in reference to ovariotomy. Where the pedicle merges in the tumour he has sometimes found remains of ordinary ovarian structure; in one case he found several old corpora lutea. ('Arch. f. Gynäkol.,' 1870.)

Dr. Bristowe relates an interesting case of a girl, æt. 21, who died under abdominal disease. Scattered all over the parietal peritoneum were innumerable small nodules, some pedunculated, some sessile. A few small nodules were attached to the surface of the liver; there was a group in the neighbourhood of the left groin. There was, in addition, a large irregular tumour springing from the pelvis; this originated in the left ovary. There were two or three cancerous lumps in the substance of the cervix uteri. An interesting feature consists in Dr. Bristowe's opinion that the cancerous growth belonged originally to the peritoneum, and that the ovarian tumour consisted of an originally cystic ovary, the parietes of which had become secondarily involved from its peritoneal connections. ('Pathological Transactions,' 1870.)

Dr. Kidd relates a case of *axial twisting of an ovarian tumour*. During life two tumours were felt, one of which, in the left hypochondriac

region, was very movable. Examining after death, this movable tumour could not be felt through the abdominal wall. It turned out that this supposed separate tumour was a projection or prominence on the surface of the large tumour. The pedicle was twisted one complete turn; this rotation it was that threw the apparently separate smaller tumour out of the way and embarrassed the diagnosis. The tumour was black from strangulation. ('Dub. Quart. Journ.,' Aug. 1870.)

Mr. Lawson Tait relates a case in which death ensued from *strangulation of an ovarian tumour*. The patient, æt. 48, suffered from strangulated femoral hernia; this was relieved by operation, but tympanitis and vomiting continued, the temperature remained at 101°, and death took place four days after the operation. *Autopsy*.—A small ovarian tumour, consisting of two equal-sized cysts, one of which was totally gangrenous, the other partially so, was found in the right ilium. There was scarcely any peritonitis, a fact which had been diagnosed by the low temperature. The pedicle of the tumour was like an umbilical cord; it had been twisted by four and a half revolutions of the tumour. Similar cases are related by Rokitansky, and two have been described by the reporter (see *Pelvic hæmatocele*).—R. B.

Dr. Dickinson relates the following case of *disease of kidney associated with ovarian abscess*. A young woman died in St. George's Hospital; had an abscess in the neighbourhood of the uterus shortly after labour; profuse discharge of pus took place by vagina; the legs became œdematous, and dropsy extended. Hectic set in; the lungs became affected; frequent vomiting; urine lithatic and highly albuminous. She died at end of seven months. The right lung was hepatized; recent vegetations upon the mitral valve; kidneys enlarged; Malpighian bodies enlarged, and giving with iodine "amyloid" reaction. One ovary excavated by several abscesses. ('Pathological Trans.,' 1869.)

Points to be observed in ovariotomy are discussed by Dr. Lloyd Roberts ('St. Andrew's Medical Graduates' Association's Transactions,' 1870).

Dr. Wiltshire relates the following case:—A woman, æt. 50, having an ovarian tumour, was seized suddenly after unusual exertion with acute pain and swelling of the tumour, with vomiting, and other signs of shock. As her only probable rescue from death lay in the removal of the tumour, extirpation was performed. Acute peritonitis was found. The tumour contained a large quantity of blood. Parts of the tumour were very friable; the pedicle broke down under the ligature, and as the only means of commanding the stump it became necessary to transfix the right half of the uterus, and to tie it with a stout silk ligature. The patient perfectly recovered. ('Trans. of Pathol. Soc.,' 1868.)

Mr. Keith reports a second series of 50 cases of ovariotomy, the first series of 50 having been published in 'Lancet,' 1867. The 100 operations give 81 recoveries. There has been a gain of six per cent. in the last 50. No malignant tumour was met with until the 61st case; this patient recovered after a very severe operation, remained perfectly well for eight months, and died within a year from cancer of the peritoneum. The 65th case died on the thirty-third day after operation. She had recovered perfectly, and was about to leave, when after a day of much

excitement, and having eaten very freely of hard grapes, symptoms of intestinal obstruction suddenly set in, the bowels having acted freely without medicine a few hours previously. After waiting some days, the abdomen was a second time exposed by an incision an inch to the right of the old cicatrix; the obstruction was easily reached, and was found to be caused by an old-standing stricture of the lower end of the ileum. For half an inch of the bowel there was not a trace of muscular fibre, but only peritoneum. The contraction admitted a No. 10 catheter.

Of the three unfinished operations, in the first, on drawing out the cyst, the adhesions were everywhere so old and intimate that nothing more was attempted. A free opening was left in the cyst. The patient got very well, married, and remained well for two years, when the fluid rapidly collected. The second had a very firmly adherent thin cyst; it was simply emptied. The patient recovered perfectly, and was afterwards treated by drainage. In the third case the uterus was drawn up to within an inch of the umbilicus. The tumour was so fused together with the uterus and bladder that nothing was done except emptying two large cysts. The patient recovered. Mr. Keith briefly sketches 16 cases in which no operation was performed.

Of the fatal cases, death occurred from pulmonary embolism fifteen days after operation. Two died from pyæmia; in one of these part of a very adherent tumour was left attached to the sacrum, in the other the tumour was cancerous and adherent to the rectum. One fair average case, in which both ovaries were removed, died from large fibrinous clot in the right auricle. One case of malignant tumour seemed doing fairly, when rapid pulmonary congestion carried her off on the sixth day.

Another of the malignant cases got over the immediate effect of the operation, and lingered for twenty-three days, worn out, apparently, by the general cancerous disease.

In Case 52 the excessive chloroform vomiting during the operation, and for some time after it, so prostrated the patient that her chance of recovery was lost. Keith has now abandoned chloroform, and uses anhydrous sulphuric ether made from methylated alcohol, administered through Richardson's apparatus. The oftener it has been given the more he likes it. Chloroform, he says, certainly saves the surgeon five or ten minutes of time and a little trouble. Had it never been heard of he doubts if humanity would have suffered from the want of it.

When practicable, the extra-peritoneal method of treating the pedicle has been adhered to. No case has been operated upon in an hospital. ('Lancet,' 1870.)

Prof. Spiegelberg gives the histories of eight additional ovariotomies. Three ended fatally, five recovering. One died from the torn cellular tissue of the broad ligament; there was no pedicle. The tumour had pullulated through the peritoneum; it was impossible to secure all the vessels. One died, having a perforated cyst, a diseased omentum, and breaking down of papillary excrescences in the abdominal cavity. One died on the seventh day, from suppuration of the pedicle, which was thick and short, and had been divided by cautery, then secured by liga-

ture and dropped into the belly. His cases, he says, prove the convenience and safety of dropping the pedicle into the belly. Complete closure of the wound is obtained. The main condition of a successful issue is the resisting capacity of the constitution. ('Arch. f. Gynäkol.,' 1870.)

Dr. Noeggerath contributes an elaborate memoir, historical, critical, and practical, on the procedure for tapping ovarian cysts through the vagina. He places the patient on the edge of the fauteuil somewhat in lithotomy position, passes a curved trocar and canula to the most prominent part of the tumour and pierces the cyst. A curved bistoury, with a button at the end, is then passed through the canula, the canula is withdrawn sufficiently to allow the cutting edges of the bistoury to incise and enlarge the wound. Removing the bistoury, the canula is again pushed forward into the wound, and through it past the sound, which serves as a guide to the introduction of a tube into the cyst after the removal of the canula. The canula used in one case was a piece of elastic stomach tube, about ten inches long. This is retained in the wound to afford an exit to the contents of the cyst. Afterwards, Dr. Noeggerath used a special tin canula of large diameter, having a self-retaining apparatus. Through this injections were made when the discharges were offensive. In one case the incisions made caused copious hæmorrhage, filling the cyst, which had previously emptied. This was stopped by compressing the canula against the angle of the wound by compresses. In another case the hæmorrhage was fatal. Dr. Noeggerath says the condition of the cyst-walls must be taken into account when we decide about the choice of a method of operating; if we admit that a cyst with thin walls will collapse more readily, it may, on the other hand, prove a source of danger from the spreading of inflammation lighted up in the inner membrane to the peritoneum. Peritonitis has frequently followed the operation. Cysts containing fat, hair, or encephaloid matter, must be excluded from the operation. Colloid cysts, even if their contents be not thoroughly fluid, can be treated in this manner. In a case operated upon by Dr. Schrectter rapid liquefaction of the colloid matter took place after the operation.

When dealing with two or more cysts there is danger of twice perforating the peritoneum, when decomposed fluid or gases would escape either from the upper or the lower cyst into the abdominal cavity. This accident is the reason why the operation of Récamier, recently reported by Snow, must necessarily prove fatal. They passed a long curved trocar through the abdominal walls towards Douglas's pouch, and a second trocar into the cyst through the vagina, so as to meet the first. Thus two openings were established in the cyst, the lower one giving issue to the contents into the vagina, the upper one into the abdominal cavity. It is better to act upon one cyst only at a time. It is probable that by the collapse and destruction of the principal cyst obliteration of the vessels feeding the smaller cysts takes place; hence they disappear by atrophy. The operation can only be performed in those cases where the cyst is distinctly felt through the vagina behind the neck of the uterus. The risk of hectic fever must be avoided by procuring the free evacuation of the contents of the cyst, and by alter-

ing the character of the secretions. This is done by cleansing and disinfecting injections.

The paper concludes with a table exhibiting the chief features of 48 cases in which an ovarian cyst has been tapped by the vagina. Fifty-five operations were performed upon 48 patients; 34 were unsuccessful. The disease returned in 3; result undecided in 4. Death occurred in 14 cases; in one from hæmorrhage, 4 from peritonitis, 7 from septicæmia, 1 from typhoid, 1 from an attack of peritonitis not caused by the operation. ('Amer. Journ. of Obstet.,' 1869.)

Dermoid cysts.—Prof. Gluge relates ('Presse Méd.,' 1870) a case from the practice of Dr. Grégoire, in which a dermoid cyst was spontaneously expelled from the urethra. The patient, æt. 30, had complained of retention of urine. A cyst, with some little bones and hair, came from the urethra. There were signs of inflammation of the bladder, but the woman recovered.

Dr. Fuller relates a case in which hair and cheesy matter were passed by the urethra. It occurred in a lady, æt. 50, who had two children grown up. A vaginal tumour was present. Under firm pressure this tumour was evacuated, and the tumour was felt empty. Next morning there was much pain and retention of urine. The urine was loaded with pus, and contained numerous fragments of yellowish-white cheesy matter and masses of hair, perfect, with bulbs attached. The tumour again filled rapidly, and was voided again by pressure. This was repeated several times. It appears that a dermoid cyst had ruptured at the time of a fall when hunting some years before, and that a communication was made with the bladder. ('Pathological Transactions,' 1870.)

Dropsy of the Fallopian tube.—Dr. Peaslee relates an interesting case of dropsy of the Fallopian tube. The patient had been tapped twice for ovarian dropsy. After death there was found on the right a true ovarian cyst, and on the left a tumour of the Fallopian tube, of very large size. The tumour had become occluded at the very commencement of the uterus; accumulation took place beyond, until the tube itself was distended into a sac, with the capacity of eighteen pounds. The whole was adherent to everything in its neighbourhood. ('New York Med. Journ.,' 1870.)

Dr. Golding relates a case of *puerperal mania* associated *with abscess of the left ovary.* A healthy young woman was confined naturally of her third child, and went on well until the fifth day, when pain set in in the upper part of the left thigh. There was no hereditary maniacal tendency. Lochia ceased, milk arrested, sleepless, restless, pulse weak, 80. On the sixth day exquisite tenderness occurred over the lower part of the abdomen, and she became furiously delirious. This subsided into melancholy. All the time uterine tenderness persisted; leeches, calomel, and opium were used. In the fourth week, when the formation of matter in the left ovary (iliac fossa?) was clear, an opening was made, and an immense quantity of pus was discharged, which continued for some time. Her illusions gradually left her, and she quite recovered. Dr. Golding cites three cases from West of inflammation of the ovary in connection with disordered mind, and one from Mont-

gomery of puerperal mania, where the ovary was inflamed. ('Dublin Quart. Journ. of Med.,' 1871.)

Dr. Martin, Melbourne, showed to the Obstetrical Society ('Trans.,' 1870) a cast of a hard fibrous tumour removed by abdominal section, and taken to be of ovarian origin. The patient recovered. Doubts were expressed whether the tumour did not really grow from the broad ligament.

Therapeutics of the Female Genital Organs, and Miscellaneous.

Dr. Cohnstein gives a careful historical survey of the practice and opinions of those who have related their experience upon the *injection of fluids into the uterus.* The general results seem to be that the injection of very powerful caustics is likely to cause inflammation of the uterus and peritoneum, or severe prostration and uterine colics, and these dangers are less urgent if care be taken first to dilate the cervix uteri, so that the return of the fluid injected into the cavity is easy. ('Beiträge z. Chronischen Metritis,' 1868.)

Intra-uterine medication.—Dr. Lente passes under review the various topical modes of treating disease of the cavity of the uterus. Iodine in solution he has known cause intense pain and alarming collapse, which, however, passed away, and no further bad effect ensued. He, however, contends that it is one of the best and safest remedies we possess. He speaks highly of a method long used by the reporter (R. B.), viz. coating a probe-pointed sound with a film of fused nitrate of silver, as a means of carrying the remedy into the cavity of the uterus. He properly says that, lightly used, it is not a caustic, but a powerful astringent, and applied to the interior of the uterus it sometimes causes acute pain, and a dose of morphia should be at hand to allay it. In some cases contraction of the os externum uteri has followed the too free use of nitrate of silver. As to fluid applications, Dr. Lente uses an instrument provided with a small pledget of cotton, which is carried into the uterus. By a piston a known quantity of the fluid, say solution of iodine, is forced into the cotton to saturate it, and this, being in contact with the uterine wall, avoids all force in the application. Dr. Lente speaks highly of an instrument for carrying medicinal agents into the uterus in the form of ointment. For the arrest of hæmorrhage he uses iodine injection, but in certain cases he says scraping the mucous membrane with Récamier's curette is the only effectual remedy. In certain cases of rebellious chronic metritis he recommends trial of a seton, consisting of six silk threads, carried through one lip of the os uteri. The free discharge set up leads to healthy action and diminution of bulk of the diseased cervix. ('New York Journ. of Med.,' 1870.)

The leading gynæcologists of New York have discussed the value of intra-uterine injections. Dr. Nott said a portion or the whole of the substances injected becomes neutralised in contact with the uterine discharges; even chromic acid may be injected into the uterus full of blood, and pass out without irritating the vagina, which part is very sensitive to the direct action of chromic acid. For efficient action the

uterus should first be cleared of discharges by syringe. A source of danger is obstruction to the return current by coagula. To obviate this a double-current canula is necessary. Dr. Barker preferred the sulphate of zinc in the metrorrhagia of the climacteric period. He employs a paste made of one ounce of sulphate with two drachms of glycerine, three to five grains of which is introduced through a canula. Dr. Peaslee thought intra-uterine injections should be very rarely used; he found iodine, persulphate of iron, and saturated solutions of tannin or alum, safe and effectual. Dr. Emmet spoke highly of chromic acid, saying that, diluted with an equal weight of water, it was no stronger than nitrate of silver, and did not, like this, harden the tissues. Dr. Kammerer found that flexions of the uterus often caused the retention of fluids in the cavity, and that the proper course was to keep the os internum freely open. Dr. Byrne had abandoned the use of caustic substances, and now employed mild substances, as sulphate of soda, sulphurous acid, tannin, &c.; he had become convinced that in all cases of troublesome intra-uterine affection there was some constitutional dyscrasia which must be treated. Dr. Thomas stated impressively that "intra-uterine injections do not constitute an advance in the treatment of uterine disease; that they have done and are going to do a great deal of harm."

On intra-uterine injections.—Dr. Guichard in a thesis (1870) embodying the views of M. Gallard, passes under review the history of injections into the uterus. His conclusions, based partly on experiments, partly on clinical facts, are—1. On the dead subject, injections made into the vagina do not pass into the cervix uteri. 2. Injections made into the cervix pass into the body of the uterus; he points to the soft state of the organs experimented on, and asks if same result would occur in living. 3. Alp. Guérin, Fontaine, and Guichard prove that the most powerful aspiration fails to draw liquids from uterus into tubes, or from tubes into uterus. 4. In non-puerperal uterus Guichard has never seen air or liquid pass into uterine vessels. After labour, Fontaine saw liquid pass easily by the sinuses. But, says Guichard, in the dead the muscular rings are relaxed. (So they may be in the living in cases of great exhaustion.—R. B.) 5. After labour, Fontaine found liquids passed along Fallopian tubes, and in inverse direction. Finally, Guichard denies that liquids can run by the tubes into peritoneum in the living subject. (There are, however, several positive observations to the contrary.—R. B.) Guichard says the first to make intra-uterine injections was Recolin, who published his experience in the 'Mém. de l'Acad. de Chir.,' 1750. (He is, of course, unaware that Harvey practised the same thing. See Harvey's works.—R. B.)

On some of the dangers attending tangle-tents.—Dr. L. Aitken contributes a useful paper on some of the accidents attending the use of tangle-tents. Several times he has known pelvic peritonitis follow. In one case a tolerably thick tent was passed into the cervix without difficulty, and removed at night. Next day the patient complained of pain; pulse 120; swelling found on both sides of the uterus, filling up the pelvis. Recovery. He relates a case in which a tent was applied on account of profuse hæmorrhage, probably from abortion; a retro-

uterine hæmatocele followed, but the patient was saved. In another case some laceration of the cervix was caused, but this appeared to have been produced by awkwardness in introducing the tent. He urges that the tents should never be used if there is any inflammatory action, and that they should be avoided at or near menstrual periods. As to the mode of introducing the tents, he recommends Simpson's stilet or a pair of forceps. (He appears not to be aware of Dr. Barnes' instrument, which makes the passage of a tent as easy as the passing a sound.) ('Edin. Med. Journ.,' 1870.)

Dr. Hoening relates the case of a woman who thrice after short intervals was delivered of twins, and twice aborted. On examining by sound the instrument entered 10½ c.m., the knobbed extremity being felt nearly on a level with the umbilicus. Dr. Hoening is confident the sound did not traverse a Fallopian tube, but that it actually perforated the uterine wall, the tissues being softened from puerpery. ('Centralbl. f. d. Med. Wissensch.,' 1870.)

Dr. Emmet gives ('Amer. Journ. of Obstetrics', 1869) a summary of his experience of dilatation of the cervix uteri by incision. The uterus being, he says, an erectile organ, flexure may vary in degree owing to the variation in the circulation. The flexure is above the vaginal junction. Surgical interference in such cases is unjustifiable. In endometritis with flexure he uses large vaginal injections of hot water. This after a time produces contraction of the vessels. Then a solution of chromic acid, or iron, or iodine, may be applied to the inner surface of the uterus by the aid of two instruments, the uterine probe and the "applicator." The probe is a small ductile silver sound. This takes the curve of the uterus. The "applicator" is moulded to the same curve, and carries the fluid soaked in cotton twisted on it. After using chromic acid, Dr. Emmet insists upon keeping the patient quiet. At a later period it may be useful to dilate the cervix by tents. If relief is not obtained, division of the cervix may then be useful. With regard to the intra-uterine pessary, he says pelvic cellulitis is the rule, and not the exception from its use. When the flexure is below the vaginal juncture the case is different. This is generally congenital, and dysmenorrhœa and sterility commonly attend it. His impression is that fully two out of three of the married operated upon under twenty-five years have become pregnant within the first year. Division of the cervix should not be attempted in any case when perimetritis is suspected. If the flexure is in the cervix Dr. Emmet divides the posterior lip in the median line with scissors. If the flexure is high up and at a sharp angle, division of this anterior angle with the knife will be necessary. The open canal should be firmly packed with little pledgets of cotton soaked in glycerine, and over all the vagina tamponed, as if hæmorrhage at the time actually existed. This precaution is of the greatest importance, for a divided vessel in erectile tissue may contract promptly at first, but with reaction after the operation bleeding comes on suddenly, and the mouths of the vessels enlarge in a remarkable manner from the force and continuance of the current.

Dr. Emmet has abandoned the practice of incising the anterior lip for dysmenorrhœa depending on retroflexion. He says this condition

rarely exists for any length of time without the supervention of perimetritis, and frequently of pelvic cellulitis; hence adhesions. The fundus can in such cases often be restored by gradual and repeated manipulations by a finger in the rectum, the adhesions gradually yielding.

Dr. Skinner, discussing the practice of incising the os uteri, says the operation admits of being divided into—1, the major operation, which involves incising the os uteri internum as well as the *os tincæ;* and, 2, the minor, by which the os tincæ only is incised. He prefers excising from within outwards, and this by means of Routh's two-bladed hysterotome. He thinks incision should be preceded by dilatation by metallic sounds. He contends that "on no account ought the vaginal portion of the cervix to be divided or split through and through." He doubts if incision is often serviceable as a cure for dysmenorrhœa, but says the incision of the external os is useful in sterility. ('Liverpool Med. and Surg. Reports,' Oct., 1868.)

Scanzoni, in an elaborate memoir ('Beiträge,' 1870), insists that too exclusive importance is attached to the presumed mechanical hindrance to the meeting of the semen and ova. He suggests that in many cases diseased ovaries may produce diseased ova. Frequent abnormities of the Fallopian tubes, again, are beyond diagnosis. Putting the case of a typical dysmenorrhœa, with narrow os externum uteri and sterility, he says, the os is split, the dysmennorrhœa is relieved, but the sterility continues: must we not here conclude that the cause of sterility lies in other unknown conditions? Scanzoni makes other objections to prove that narrowing of the os is not established as a sufficient or frequent cause of sterility. He cites a case of pregnancy with typical conoid cervix and small os, and reminds that conception not seldom takes place in cases where the passing of the sound is very difficult. He analyses Marion Sims' cases, and shows that in very few of them it is clearly stated that conception followed operation.

Dr. Adolph Rasch ('Obstetr. Trans.,' 1870) discusses the mechanism of *air in the vagina.* If a multipara whose genitals are normal be placed on her back, with the thighs flexed and abducted, the vaginal orifice closed, movements caused by respiration are seen, but no air enters. In the lateral position the same thing is observed even if the vulva is lax. This is even the case where the perinæum is ruptured. Rasch does not believe in the suction power of the vagina. The finger or speculum introduced whilst the subject is on her back, we find the walls of the vagina always in contact. When the patient is placed in the prone position or on all-fours, if the vulva be open air will enter, because the intestines falling downwards by gravity cause a vacuum. Under this condition violent exertion may expel the air, giving rise to vaginal flatus. If the abdomen be supported by the hands or a bandage no air will enter. Rasch deduces from this observation that it is of importance in labour to deliver the woman on her back, and also to preserve the dorsal decubitus in cases of pelvic abscess communicating with the vagina.

Under the term *vaginal respiration* Dr. Kristeller describes the movements of rise and fall of the vagina under the influence of the rise and

fall of the diaphragm. When the spoon-speculum is introduced, pressing back the posterior wall of the vagina, the rise and fall of the anterior wall, synchronously with the corresponding movements of the diaphragm, are clearly seen. Under ordinary circumstances, the vulva being narrow and the vaginal walls in contact, no air enters; but if the walls be kept apart, as by a tumour, or pessary, great relaxation, laceration of the perinæum, or other agency, air will enter, especially after labour. The influence of air is seen in the foulness of secretions, the decomposition of plugs, &c. ('Monatsschr. f. Geburtsk.,' June, 1869.)

On the relations between morbid conditions and processes in the sexual organs of women to mental disturbance is the title of an elaborate memoir by Dr. C. E. Louis Mayer, presented to the Berlin Obstetrical Society. It is too long for analysis in this place. It is barely possible to indicate the questions discussed. These are—the influence of sexual excitations on the mind in childhood, of menstruation, of the climacterium upon the mind; the relations of individual diseases and processes to psychoses, such as inflammations, faults of development, displacements, hysteria, somnambulism; the different forms of mental derangement in their relation to diseased conditions and antecedents in the sexual organs, hysterical insanity, erotic character of psychoses associated with sexual disorders; states of psychical depression, hypochondria, melancholia; states of psychical excitation, exaltation, mania, dementia. He has analysed 145 cases of mental disorder associated with morbid states of the sexual organs, excluding labour and puerpery. The memoir is enriched by numerous clinical illustrations, and especially deserves to be read by those physicians, special alienists and others, who regard nervous symptoms in females as universally dependent upon primary or essential disorder of the nervous system, ignoring the intimate relations of the nervous system to the generative system, and who, neglecting this study, fail to appreciate the frequency with which the nervous system is attacked through the generative system. ('Verhandl. des Gesellsch. f. Geburtsk.,' 1869.)

II.—*Pregnancy.*

The Placenta—Physiology and Pathology.

Ercolani contends that the maternal portion of the placenta of the vertebral mammifera, including the human species, is always glandular. It is a glandular organ of new formation, destined to secrete a humour serving for the nutrition of the fœtus. The placenta is formed of two distinct parts—the fœtal, which is vascular and absorbent; the maternal, which is glandular and secreting. He says the human placenta belongs to the same order as that of the ape.

Dr. James Young exhibited to the Obstetrical Society of Edinburgh an *umbilical cord*, which measured only ten inches in length. ('Edin. Med. Journ.,' March, 1870.)

"On the unequal Development of the Umbilical Arteries." By Dr. Haussmann. ('Monatsschr. f. Geburtsk.,' 1869.)

Dr. Langhans describes the relation of the chorion-villi to the

maternal placenta. He says the villi of the fœtal placenta penetrate the maternal placenta in stems one millimeter thick as well as in finer ramifications, that they are free from epithelium, and so intimately fused with the maternal tissue that even strong traction never separates them, but results in rending the maternal tissue. The insertion of the thick stems is macroscopic, of the finer branches microscopic. This observation is opposed to the general description, and Kölliker's, which says that "the final terminations of the branches are always and without exception free, and in no connection with the maternal placenta." On fatty degeneration of the maternal placenta, Langhans agrees with Dohrn in opposition to Hegar in regarding the degree of change found at the end of gestation as inconsiderable, and not as preparatory to the casting of the placenta. This view was originally explained by the reporter, Dr. Barnes. ('Med.-Chir. Trans.,' 1851 and 1853.)

On calcification of the placenta Langhans concludes that it affects principally those parts which are most necessary to the nutrition of the fœtus. (This also is an old observation.—R. B.) ('Arch. f. Gynäkol.,' 1870.)

Dr. Winckler describes the *villi of the human amnios* ('Jenaische Ztschr. f. Med.,' 1868.) They have been mentioned by older authors. H. Müller, Kehrer, Dohrn found them on the human amnios. Winckler in 200 afterbirths has never missed them. Their original site is the amniotic fold, on which they cover a tongue-shaped space, close to the insertion of the umbilical cord. Like Birnbaum, Kehrer, and others, Winckler found these growths mostly in the shape of granules, sometimes resembling the papillæ circumvallatæ. Their size was that of a pin's head or bigger. Winckler associates them with the development of the navel-string.

Dr. Hartmann ('Monatssch. f. Geburtsk.,' 1869) quotes Hecker as stating a case in which the *vasa omphalo-mesaraica* were found persisting in a *mature placenta*, but unique; he further quotes Schultze as stating that this condition is constant. He then relates several cases and figures the vessels found. (Twenty-five years ago, the umbilical vesicle and the omphalo-mesaraic vessels were shown to me in mature placentas by the late Dr. Bloxam, who described their presence as constant.—R. B.)

Dr. Winckler describes a case of cyst-formation in the amnion. A mature placenta showed exactly at the point where the amnion merges into the funis a translucent cyst of gelatinous consistence. It had no relation to the omphalo-mesenteric duct, which ran on the opposite side. The next seat of the cyst was in the connective tissue stratum of the amnion. Above the funis end of the cyst were a row of cavities, recognised by microscope, in constitution exactly like the large cyst; all were filled with a gelatinous fluid.

Endometritis placentaris gummosa is described from a specimen by Dr. Kronid Stavsjansky in the 'Vierteljahrs. f. Praktische Heilk.,' 1871.

The fœtal circulation.—Dr. Andrew Buchanan, of Glasgow, contests the doctrine that the placenta acts like the lungs in changing the blood from black in the umbilical arteries to red in the umbilical vein. He supports his views by the following observations: If after the

child is born, instead of putting the ligatures round the cord, and dividing it between them, only one ligature be applied, and after dividing the cord on the placental side of the ligature the blood be collected, assisted by squeezing the cord downwards, from three to four ounces of blood can be obtained. Now, the blood is never partly of the one colour, and partly of the other, but either wholly black or wholly red; and it can be obtained of either colour according to the mode in which the experiment is performed. If the cord be tied the moment the child draws its first breath and cries, then the whole blood, both from the arteries and from the vein, is black; but on allowing it to stand exposed to the air, it becomes florid on the surface like ordinary blood, showing it to be quite susceptible of being acted on by oxygen if there had been any of that gas supplied to it by the placenta. Buchanan infers, therefore, that the black blood of the umbilical arteries undergoes no change of colour in passing through the placenta, but returns through the veins of the same colour. If, again, the child be allowed to breathe freely before the cord is tied, then the whole blood obtained from the cord is of a bright red colour, which it has manifestly acquired in the lungs of the child before going to the placenta.

(There seems to be a fallacy in these observations. After the expulsion of the child, and especially after the child has breathed, as in these observations, the placental circulation is no longer what it was, whilst the fœtus was in utero. It is disturbed in two ways, first by the contraction of the uterus; secondly, by the establishment of lung-circulation in the fœtus.—R. B.)

Dr. Buchanan also discusses the question, do respiratory movements ever occur before birth? In a head-last labour, the chest being in the pelvis and the head still in utero, he observed regular rhythmical movements of the chest exactly resembling those of respiration. The cord was pulsating throughout.

Another case illustrating the relations of twin pregnancy is very interesting. It is headed—*Twins, one of which unconsciously sucked his brother's blood, and so deprived him of life.* The child first born was remarkably vigorous, respiring deeply, the whole surface was livid. The cord was quickly tied. The other child presented a marked contrast; it was pale and exsanguine; it never cried, but after some time a feeble respiration was established. The cord was immediately tied. The child was kept warm, and survived about thirty hours. There was only one oval placenta. Dr. Allen Thomson examined it, and found free vascular communication throughout every part of it, so that liquid injected through the vessels of one cord returned rapidly by the other. It is clear (says Dr. Buchanan) that the child first born, by its vigorous inspirations, filled its own vessels, both pulmonary and systemic, with blood, so draining off from the placenta the brother's share. ('Glasgow Med. Journ.,' 1870.)

Dr. Duroziez has studied the question of *the enlargement of the heart under pregnancy* on 135 women. Taking the normal area of the heart in non-pregnant women to be nine centimeters high and twelve centimeters wide, he arrived at the following conclusions:—1. That the

enlargement during pregnancy may be determined. 2. That during the first day of the labour the left cavities of the heart diminish, the right remaining enlarged. 3. That at the time of the milk-flow, about the third day, the heart becomes elongated; it remains enlarged during suckling, and diminishes when the woman does not suckle. 4. That in women who have had many children the heart is larger than in those who have had only one or two. ('Gazette des Hôp.,' 1868.)

Diagnosis.—Professor Massarenti has subjected to fresh clinical and critical examination the question how far the auscultation of the fœtal heart can give evidence of the presentation of the fœtus at the end of gestation. Referring to the generally received facts that in head-presentations the fœtal heart is heard at a level below the umbilicus, and in breech-presentation above that level, he examines the objection urged by Belluzzi against relying on this evidence. Belluzzi's case was that of a woman examined after the waters had long escaped, and when the uterus had been contracting spasmodically; Belluzzi found the fœtal sound to the left of the median line and for several centimeters below the umbilicus, and says if he had relied upon this sign he must have concluded that the head presented. But the breech presented. Massarenti replies that the contracting uterus had driven the breech down, and that hence the liver was not invalidated. Belluzzi declares, contrary to most observers, that the fœtal heart is heard loudest nearer to the breech than to the head; and hence a new mode of interpreting evidence of auscultation. He recommends to measure the height of the uterus from its lower segment to fundus, and then having found the area of the fœtal heart-sounds, to conclude that most probably the extremity nearest to this area is the breech. He affirms that this is actually the case in a great number of observations made before labour, and in new-born children. Massarenti, on the other hand, examining the fœtus as it is packed in utero *with the head flexed*, affirms that the cardiac sound is nearer to the vertex. ('Med. Gazette of Bologna,' 1870.)

B. Schultze disputes ('Jenaisch. Ztsch. f. Med.,' 1866) the correctness of attributing the scar streaks on the front of the thigh to pregnancy. In 222 females between 15 and 35 years old, who had perfectly smooth scarless bellies, and who had never had children, he found the streaks on the thighs in 80 per cent. Similar streaks are sometimes found in men, but much more rarely. Schultze is inclined to attribute them in women to the great transverse growth in the region of the hips at puberty.

Dr. E. Strohl, of Strasbourg, has examined the value of certain admitted signs of anterior pregnancy, basing his conclusions on the observation of nearly 350 women. First, as to *the transverse fissure of the os uteri*. It presents great differences. In 10 cases where there had been no pregnancy, he found it quite as great as in cases where pregnancy had existed. 2. The *lateral fissures*. They are of great value when they exist, but their absence does not exclude an anterior pregnancy. 3. The *cracks in the skin of the abdomen* are of high value. Where they exist the probability that pregnancy has existed is very great. But Strohl says they are not always easy to find; they are in

some women so small and so few that they must be sought for with great care. The skin must be stretched across the direction of the cracks, for when at rest the skin recovers itself and conceals them.

In one case of premature labour at six months, in one at seven months, in four cases of labour at term of one child, and in two of three labours, there was no trace of cracks upon the abdomen or thighs. On the other hand, cracks on the thighs only, without anterior pregnancy or disease, were met with four times.

Strohl concludes that there are but two signs possessing an *almost* absolute value when they exist, and are well marked, whilst their absence does not exclude an anterior delivery. These are, the lacerations of the os uteri, and the cracks in the *abdomen*. ('Annales d'Hygiène Publique,' July, 1870.)

Dr. Horton relates a case of labour at term, in which the hymen was found entire, and obstructing the passage of the head. It was incised. ('New York Med. Journ.,' 1870.)

Dr. Wallich contributes the following observation to our knowledge of the *duration of pregnancy*. A woman, æt. 37, who had borne 5 children, menstruated for the last time on the 30th and 31st July; fruitful intercourse took place on the 4th August, delivery on the 30th April, that is, 269 after the conception. In the succeeding pregnancy the period of gestation was also 269 days. The children were healthy and mature, and the dates were precise. A third pregnancy also for 269 days presumably, but the date was not so rigorously fixed. ('Arch. f. Gynäk.,' 1870.)

Dr. Ahlfeld demonstrated to the Leipzig Obstetrical Society the possibility of *measuring the fœtus in utero*. The length was estimated by taking the length of the ovum axis by Baudelocque's pelvimeter, one knob of the instrument being introduced by the vagina, the other carried externally to the highest point of the fœtus. ('Arch. f. Gynäkol.,' 1870.)

The vomiting of pregnancy. J. K. Spender relates ('Brit. Med. Journ.,' 1869) three cases illustrating the usefulness of the hypodermic injection of morphia in this condition.

Diseases complicating Pregnancy.

Dr. Paulicki observed ('Mon. f. Geburtsk.,' 1869) in the hospital at Hamburg, three cases of *variola hæmorrhagica* in pregnant women. Abortion set in with violent symptoms, fever increased, and death followed. In one case the woman was four months gone. Flooding followed expulsion of the ovum. Autopsy revealed a small show of petechiæ on the breast and legs; and under the pulmonary pleuræ numerous punctate ecchymoses. Hæmorrhagic spots were found in the mucous membrane of the trachea and bronchi, and in many other tissues throughout the body.

Embolism.—Dr. Playfair relates a case rendered especially valuable by the post-mortem history ('Brit. Med. Journ.,' 1869). J. W—, æt. 21, six months pregnant, was operated upon for fissure in the rectum on the 5th December. On the 13th the pulse and temperature rose, and re-

spiration to 40. Labour pains set in, and the child was expelled next day. "Extreme dyspnœa, countenance excessively pale, face expressing extreme anxiety. No pulse at wrist, nor at the posterior tibial artery. Sounds of heart almost *nil*." She called incessantly for air, said she was being suffocated. She died at 7.45 a.m., and during the last few seconds her face was convulsed. Autopsy: lungs quite healthy; heart healthy, its right side extremely distended, also the large veins of the neck and the two cavæ; left ventricle small, pulmonary veins nearly empty. At the bifurcation of the pulmonary artery plugs of firm fibrine were found obstructing the passage of the blood. In the centre of these plugs was a piece of fibrine the size of an almond, at the base of which was an irregular surface, which fitted closely to a corresponding rough surface in a clot of the iliac vein. This was the origin of the embolus.

Dr. Hennig reports ('Monatssch. f. Geburtsk.,' 1869) a case of *embolism* and abscess of the uterus, thus found in an organ little disposed to this affection. A woman recovered very shortly after her second labour, and after the third and last had a severe hæmorrhage, followed by secondary hæmorrhage. Injection of vinegar or perchloride of iron always stopped it, but it returned. The uterus was low in the pelvis and fixed. Syncope repeatedly occurred, so that transfusion was resorted to. Blood whipped and defibrinated, was used, but very little could be thrown into the veins. The patient died three hours later, A fibrinous clot was found in the vena cava, filling the right auricle, in which was a loose thrombus, probably an embolus from the uterine vein. The fibrinous clot extended to the pulmonary arteries. In the right median vein, close to the point of puncture, and nearly filling the calibre, was a firm clot extending to the basilica. This had no doubt hindered the transfusion. The lungs were œdematous. The uterus was fixed at the left of the pelvic wall. A little above the os uteri were two openings; the larger was the uterine cavity, the smaller led to the left into the cavity of an *abscessus gangrenosus parametriticus*. A bit of decomposing matter resembling placenta adhered. In a branch of the much distended left uterine vein, which ran close to the cavity of the abscess, was an old decomposing thrombus, from which a portion had become detached, and become arrested in the right auricle, and had given rise to the sense of oppression during life. The author traced the cause of the process to the penultimate labour.

Extra-Uterine Gestation.

A case of abdominal gestation. Dr. Pernice ('Berl. Klin. Wchnsch., 1869.)

A case of primary abdominal gestation and recovery without suppurative action. By Dr. L. Pfeiffer. ('Monatssch. f. Geburtsk,' Dec. 1869.)

Dr. Lecluyse relates a very remarkable case of extra-uterine gestation following on Cæsarian section. A woman, æt. 28, had undergone this operation on account of contraction of the pelvis, and became pregnant the next year. Abdominal pains set in, the cervix uteri could not be

reached, the belly was pendulous, and the fœtus was felt through the walls; gastrotomy was postponed for four days, then fœtal movements had ceased. An incision was made very carefully, but so thin were the abdominal walls that the amniotic sac was pierced at once. A fœtus of seven or eight months was extracted dead. Gentle tractions on the cord showed that the placenta was adherent to the anterior and inferior surface of the small intestines. It spread out star-shaped, losing itself by vascular irradiations amongst the intestines. It was ascertained that the ovum had no other envelope than the amniotic membranes. The wound was closed, except at the lower part, for the exit of the cord; the placenta being left. On the fifth day the placenta was decomposing, a portion was cut away; fetid discharge set in. Peritonitis and obstinate vomiting appeared, and death followed on the tenth day.

Autopsy.—The intestines showed no trace of the placental insertion. But the singular feature was that the uterus, the size of a goose's egg and contained in the right iliac fossa where it had contracted adhesions, presented on its anterior surface an oblong opening communicating with the uterine cavity.

Dr. Hennigsen relates an interesting case of *abdominal gestation complicating uterine gestation*. The patient, æt. 37, had borne five children. Her second pregnancy resulted in the birth of a mature child having a large spina bifida, followed by metroperitonitis of the right side. After the fifth labour signs of pregnancy appeared, attended with frequent rigors and sudden acute peritonitic pains, and syncopes and tenesmus of bladder. Later a sanguineous discharge took place from the vagina. Later still fœtal parts could be felt through the abdominal walls, and fœtal movements became manifest, and after a time ceased. When labour was expected, expulsion-like pains set in, and a decidua was discharged of the size of a goose's egg. A month after this menstruation appeared, and at subsequent periods rigors and abdominal pains occurred. These signs recurred during the succeeding two years. The abdominal tumour greatly diminished in size, through the absorption of the fluid contents of the sac. Signs of pregnancy again came. As the uterus grew, the abdominal gestation tumour was lifted up into the right half of the abdomen, eventually as high as the liver. The fundus uteri was then felt in the left hypogastric region. Subjective symptoms then became severe, distress in breathing was so great that it was determined to induce labour. This was done by means of the uterine douche; a fœtus of seven or eight months was expelled, and the placenta without difficulty. For ten days the patient did well; the abdominal gestation tumour descended nearly to its former position. Pains and fever set in, the tumour became tender, and during the next month symptoms of subacute inflammation in the tumour, with irritative fever, became marked. Pointing took place in the hypogastrium; perforation ensued below the navel; an odourless ventral fluid escaped, showing numerous cells in fatty degeneration, free fat-molecules, and many large nucleated cells. Pulse, 120; temperature, 39° C. The opening was enlarged by laminaria. After two months a portion of umbilical cord was evacuated, but no hard portions of the fœtus. Inflammation of the

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right knee-joint appeared. Further symptoms of chronic pyæmia set in, and signs of diffuse perforative peritonitis having suddenly come on, the woman died.

Autopsy.—The sac was adherent for a small space to the abdominal wall round the external opening, extensively adherent below to bladder, small intestines and colon. It contained a chalky incrusted fœtus. There was a perforation, which had been made through the pressure of the sharp edges of the macerated fœtal skull through the sac in the region of the valvula coli. This had caused the fatal diffuse peritonitis. The uterus was normal, pushed into retroversion; the left ovary and tube were normal; the broad and round ligaments in the right had been worked into the structures of the sac. ('Arch. f. Gynäkol.,' 1870.)

Dr. Hall Davis related a case of *extra-uterine gestation*, and exhibited the specimen ('Obstetr. Trans.,' 1870.) A pluripara: symptoms suggesting rupture of the uterus and escape of the fœtus into the abdominal cavity set in, and abdominal section was contemplated and rejected. Jaundice, delirium, vomiting, death followed.

Autopsy.—A fœtus of full size lay free in the abdominal cavity, the uterus, enlarged, lay in the right lumbar and iliac region, partly in front of the fœtus. A large cyst connected with the left broad ligament was found, which had contained the fœtus and had burst.

A case is narrated ('Obstet. Trans.,' 1869) by Dr. Martyn. Drs. Martyn, Madge and Phillips, reporting upon the specimen, believe it to be an example of an ovarian fœtal cyst, the possibility of which has been too absolutely denied.

Two cases of tubal gestation (*op. cit.*), are related by Andrew Brown and Mr. Worship.

Dr. Chatelain illustrates the complication of *pregnancy with pneumonia.* ('Journ. de Méd. de Bruxelles,' 1870.)

In one case a woman at the end of the sixth month had pneumonia. Some symptoms set in, amendment followed spontaneous premature delivery. Sudamina followed, ataxic delirium, and recovery after illness of five weeks. He then cites various authors in relation to the subject, referring to eighteen cases collected by Grisolle; eight of these died, in four spontaneous labour occurred, in five abortion. Bourgeois relates twelve cases; two died, in five abortion, in three premature labour set in. Grisolle and Bourgeois found the symptoms moderated after delivery.

Displacement of the uterus, retroversion of the gravid womb.—Dr. V. Haselberg relates a remarkable case of retroversion of the gravid womb. A woman, æt. 38, had borne two children, then two premature labours, then a child at term. From her first pregnancy she had an enormous pendulous abdomen, so that she had to carry it suspended by a belt hung over her shoulders. Being pregnant, retention of urine appeared. The os uteri could not be reached behind the symphysis, but it was at last made out, projecting forwards behind the abdominal wall. Attempt at reposition failed, but premature labour and expulsion of the fœtus followed. The uterus retained its abnormal position notwithstanding. The fundus was quite thrown back in the sacrum, coming close to the vulva, whilst the os was pointed upwards above the symphysis. By

lifting up the fundus, and bringing the axis of the uterus into relation with that of the pelvis, the placenta was easily removed. The woman had a strongly angular scoliosis of the thoracic vertebræ to the right. This so shortened the abdominal cavity that the uterus could not find room during pregnancy. This case proves that a complete retroversion of the gravid uterus may exist after the fourth month, without dilatation of the anterior wall into the abdominal cavity. The pregnancy here was in the fifth month. ('Monatssch. f. Geburtsk.,' Jan., 1869.)

Dr. J. Goodman gives a case of retroversion; a previous unsuccessful attempt had been made by the hand in the rectum. Dr. Goodman replaced the uterus by means of the colpeurynter placed in the rectum. ('Amer. Journ. of Med. Scien.,' Oct., 1868.)

Dr. Riedel relates a case described as *retroversion of the uterus in advanced pregnancy successfully reduced.* A woman had retroversion of the uterus, with the usual symptoms, in the fourth month of her first pregnancy. It was reduced by pressure from the rectum; and the pregnancy went on to a favorable termination. In her next pregnancy the same symptoms of distress became developed when, according to her calculation, she was eight months gone. After emptying the bladder of a large collection of alkaline urine, and the bowels from hardened fæces, reduction of the uterus was effected by pressure through the rectum by means of a speculum plug padded with linen. She was delivered next day. The child weighed only four pounds, and was very small. The history shows that retroversion was, at least the second time, an original condition; although the child was small, and, therefore, probably the pregnancy was less advanced than was supposed, the uterus could scarcely have been wholly locked in the pelvis. The case was, no doubt, one of partial retroversion, the greater portion of the uterus being developed in the abdominal cavity. ('Monatssch. f. Geburtsk.,' Dec., 1869.)

III.—*Labour.*

The Mechanism of Labour.

The Rev. Samuel Haughton, M.D., has contributed a very valuable memoir on the muscular forces employed in parturition to the Dublin Obstetrical Society. He says that in the first stage of labour the involuntary muscles of the uterus contract upon the fluid contents of the organ, and possess sufficient force to dilate the mouth of the womb, and generally to rupture the membranes. In the second stage of labour reflex action calls in the voluntary abdominal muscles, which aid powerfully the uterine muscles in expelling the fœtus.

Studying first the force of the uterine muscle, he finds the mean weight of this muscle, derived from Heschl, Montgomery, and Levret, to be 1·56 lb., and the mean thickness of the muscular wall to be 0·1519 inch, and the tensile strain of uterine wall per inch to be 15·577 lbs.; and from these data he calculates that the maximum hydrostatical pressure produced by uterine contraction is 3·4 lbs. on the square inch. Then citing the experiments of Dr. Duncan on the pres-

sure necessary to rupture the membranes, who found the greatest pressure was 3·1 lbs. and the least 0·26 lb., giving a mean of 1·2 lb., and combining this experimental result with his calculation, he concludes that the uterine muscles are capable of rupturing the membranes in every case, and possess in general nearly the requisite power.

The extreme force of uterine contraction produces a pressure of 3·4 lbs. per square inch, acting upon a circle 4½ in. in diameter, which, as assumed as the average area of the pelvic canal, is equivalent to a pressure of 54·1 lbs. Joulin's experiments give 110·23 lbs. as the maximum force, uterine and abdominal muscular combined, required to expel the fœtus. Duncan considers 80 lbs. as the maximum. This would represent 5·03 lbs. to the square inch, which is greater than the uterine muscles unaided are capable of producing.

The author then discusses the force brought in by the abdominal muscles, which are four in number—the rectus abdominis, obliquus externus, obliquus internus, and transversalis. He found by experiment upon three young men, multiplying the curvature into the tension of the abdominal muscles at the navel, that the result was an expulsive force of 32·926 lbs. to the square inch, available to assist the uterus in completing the second stage of labour. Adding the combined force, we get—

Voluntary muscles	54·10 lbs.
Involuntary muscles	523·65 lbs.
Total . . .	577·75 lbs. av.

"Thus we see that, on an emergency, somewhat more than a quarter of a ton pressure can be brought to bear upon a refractory child that refuses to come into the world in the usual manner."

As a consequence, Dr. Haughton insists that chloroform used beyond the stage of inducing drunkenness and indifference to pain is positively injurious, by cutting off the action of the voluntary muscles, without which the uterus is inefficient. ('Dublin Quart. Journ. of Med. Sc.,' May, 1870.)

(Interesting as these investigations and calculations are, there are elements in the problem that appear to have attracted insufficient attention. First, experiments performed on dead tissues can scarcely be accepted as evidence of the properties of living tissues. Living tissues can probably resist a greater pressure. Secondly, the estimate of the expulsive power of the abdominal muscles drawn from observations made upon men cannot safely be applied to women at the time of labour. The curvature in the two cases is widely different; the tension and the pressure must also be different. Moreover, the diaphragm, which undoubtedly is a power in labour, seems overlooked. Thirdly, the *reflex* muscular force employed in labour is too much confounded with voluntary power. Chloroform does not, unless carried to an extreme degree, annul reflex muscular power; and in the minor degree of anæsthesia, found efficient to blunt the sense of pain in labour, even voluntary power is not altogether subdued.—R. B.)

Dr. Snelling gives an historical *résumé* of what has been said about relaxation of the pelvic joints during pregnancy and labour. He also

investigates the anatomical structure of these joints. Dr. Fordyce Barker and Dr. T. E. Taylor, discussing Dr. Snelling's paper, added original cases and observations. ('Amer. Journ. of Obstetrics,' Feb., 1870.)

Professor Hodge contests the accuracy of Dr. Duncan's arguments against the *synclitism of the head* during labour. Hodge says he has always taught that the fœtal head traverses the pelvis, maintaining parallelism with the planes of the pelvis successively reached. His confidence in the truth of this law is strengthened by continual observation. If, he says, this fact be substantiated, its practical importance can hardly be estimated. If the great occipital extremity of the head descends in a natural labour in such a manner that the occipito-mental diameter always coincides with the axis of the obstetric canal, whether straight or curved, and that the cervico-bregmatic plane of the head, with its diameters of equal length, is parallel to the successive planes of the pelvis through which it passes, it results that it is the great business of the accoucheur during the whole process of descent, to insure this parallelism by facilitating, during the first portion of the descent, the process of flexion of the head, and during the last, by facilitating its extension. The blades of the forceps, for example, should always be applied as nearly as possible in the direction of the occipito-mental diameter, and traction effort be made in the axis of the obstetric canal, inasmuch as the longest diameter of the head will be coincident with the obstetric axis, and the cervico-bregmatic circumference will be parallel with the planes of the pelvis and vagina. This, as all experience demonstrates, is not only the most natural, but also the easiest mode for the transit of the head. ('Amer. Journ. of Med. Sci.,' 1870.)

Dystocia from the Child.

Dr. Carl Hecker publishes a memoir on the *form of the head in face-presentations*. He contends that the face-presentation is produced by a dolichocephalic condition; the greater proportional length of the posterior arm of the lever formed by the long axis of the fœtal head moving on the atlas acts in early labour so as to bring down the face. Winckel criticised this, alleging that the dolichocephalic condition noticed after birth by Hecker was the result, not the cause, of the face-presentation. Hecker replies that the persistence of the dolichocephalic state weeks after birth proves that it existed before the labour. (The reporter must, however, state that this persistence does not prove Hecker's proposition. The form imparted to the head during severe labour is commonly preserved long after, perhaps even during life to some extent.—R. B.) ('Arch. f. Gynäkol.,' 1870.)

Dr. Duncan, citing the evidence put forward by Hecker in favour of the opinion that face presentations are the result of the dolichocephalous formation of the fœtal head, discusses the general question as to the causes of face-presentations. Hecker shows that a great majority of children born with the face presenting have the dolicocephalous form; the height of the skull is small, it is prominent posteriorly, and has narrow but slightly bulging parietal bones. These conditions he

affirms to be the original and permanent states of the heads of children born in this manner, and not the result of labour.

In ordinary labour, Dr. Duncan observes, with the vertex presenting, transformation into a face case is provided by the greater length of the anterior cranial lever-arm, which maintains flexion. Not doubting the influence of the dolicocephalous form, he finds in the frequent lateral obliquity of the uterus the most probable cause. This obliquity imparts a curvature to the genital canal at the pelvic brim, where the free transformation begins. If the uterus is deflected to the right, the occiput, being turned to the left foramen ovale, will lie in the concavity of the uterine curve. If the head meets with much resistance, the occiput will tend to advance first, from the comparative shortness of the posterior cranial lever, and from its being nearer the line of the propelling force, which must incline towards the left in consequence of the deflection of the uterus, the vertex presentation will be maintained.

But nearly once in three and a half times the occiput is turned to the right, that is, to the convexity of the canal; the propelling power will then tend to make the forehead descend.

Dr. Duncan incidentally calls attention to the far greater frequency of face-presentations in Germany as compared with this country; and refers to the dorsal and lateral decubitus in labour as possibly influencing this result. (With regard to Hecker's suggestion that face-presentation is due to the dolicocephalous form of the fœtal head, we cannot avoid remarking that the existence of this form previous to labour is not proved. The measurements and drawings of heads taken by the reporter afford strong evidence that the dolicocephalous form is the result of labour.—R. B.) ('Edinb. Med. Journ.,' 1870.)

Dr. Spondly discusses ('Mon. f. Geburtsk.,' 1869) the history of *face-labours* by analysis of 56 cases, of which 28 occurred in hospital, 25 in private practice; 27 were first labours, 29 in pluriparæ; 29 children were boys, 24 girls. In hospital, 23 cases ended spontaneously, 4 by forceps, and 1 by Cæsarian section after death, caused by internal hæmorrhage. In private 7 cases only ended spontaneously, 18 by forceps, 1 by turning, 2 by cephalotripsy. The contrast between hospital and private practice is explained by the fact that in private the practitioner is only called in to difficult cases. Five mothers died of the spontaneous labours, 2 resulted in loss of the child. Of the artificial labours, in 19 the child was lost. There is nothing definite as to the mode of production of the malposition, or as to rules of treatment.

Twin pregnancy is illustrated by B. Curgenven ('Obstetr. Trans.,' 1869), who gives the history of an hereditary twin-bearing family, in which the tendency to double birth was remarkably manifest.

Dr. Brunton (op. cit.) supplies evidence against the doctrine that twins contained in one sac are always of the same sex. Of 10 cases in which the children were of different sexes, in 9, he says, there was only one sac. This is so directly at variance with the observation of others, that further evidence is desirable. Dr. Playfair (op. cit.) observed that in all the cases of united twins the sex was the same. Here necessarily they were contained in one amnios. A case of united twins was shown by Dr. Rogers (op. cit.), confirming this point.

Dr. Rintel describes ('Mon. f. Geburtsk.,' 1869) a case of dystocia from the simultaneous entry of two heads into the pelvis. A midwife found a breech-presentation. Extraction was effected as far as the shoulders. Rintel found a second child in utero. He applied forceps, and to his astonishment delivered this second child first. The first then followed. The child delivered by forceps and the mother did well.

Dr. Rothe relates a case illustrating the mechanism of labour with united twins. A primipara in labour, was found with a face presenting; forceps applied drew down head very tediously; when the face came to the outlet the forceps slipped off, when the presenting part retreated. The same thing happened on a second trial. A third brought the face through, and respiratory efforts were seen. The pains were now stormy, but the trunk could not be drawn down. The whole hand was now introduced, and seized the thorax; under twisting and dragging the shoulders of a second child came down, then the head belonging to it came down. Considerable difficulty still opposed delivery; but it was effected without mutilation. The mother recovered. The fœtuses were dead, both female, mature. ('Arch. f. Gynäk.,' 1870.)

Dr. Max Lindmann relates an instructive history of *labour with a double monster*. When called the patient was in strong labour; the pelvic end of the child was lying forth in the first position. Traction on the feet was met by an irresistible obstacle; the body could not be drawn out beyond its pelvis, although the force used broke the ligaments of both hip-joints. That the woman was well formed was known from her having previously borne a full-grown child easily. The violent uterine contractions foiled external exploration. The fœtal abdomen was so large and out of proportion with the legs, as to fill the mother's pelvis, preventing the entry of the hand. It was, therefore, concluded to perforate, when, after exvisceration, the body had somewhat collapsed, the operator's hand was gradually passed up to the neck of the child, when two necks were felt diverging from the trunk. A blunk hook was passed up the angle formed by the bifurcation of the necks, and after considerable difficulty the farther head was separated. Light traction, then, upon the trunk extracted this with the remaining head. The mother recovered well. ('Monatsschr. f. Geburtsk.,' June, 1869.)

On acephalous monsters and protracted labours arising therefrom.—W. H. C. Curtis gives the result of his experience, which he says has been large, as to the influence of acephalous monsters upon labour. He says the labour is always protracted, and that there is more hemorrhage. He attributes the protraction to the absence of the fully-developed skull. As the uterus presses upon the child, the child's body doubles upon itself, the back of the neck becoming the presenting part. All his cases he delivered by forceps. He says this mode or by turning ought to be adopted. ('Australian Medical Gazette,' 1870.)

Mr. James Oswald relates a case ('Obstetr. Trans.,' 1870). A large pailful of liquor amnii escaped. The fœtus presenting by arm was turned, but the body not descending it was found that the head adhered to the posterior wall of the uterus. The adhesions being broken

down, the fœtus was delivered. The placenta was also adherent. No hæmorrhage. Recovery.

Dystocia from the Soft Parts.

From displacement.—Mr. Allison relates a case in which the gravid uterus, between the seventh and eighth months, was entirely prolapsed. He managed to return it into the mother's abdomen. She was delivered at term of a live child. ('Brit. Med. Journ.,' 1869.)

From syphilitic induration of cervix.—Dr. Putégnat mentions five cases of this kind where large and indurated ulcerations of the cervix were the cause of difficult parturition. All the confinements were premature. The first case necessitated incision of the os and turning; but the mother sank, after a child, evidently dead for some time, had been extracted. In the four other cases the children all died from two to four days after birth; but the mothers recovered. With the latter, the parts yielded sufficiently, but the labour was protracted from the weak state of the patients, brought on by the exhausting effects of syphilis. ('Journ. de Bruxelles,' 1870.)

Dr. Breisky describes the *condition of the cervix uteri during labour.* The peculiar condition is, that after recent labour the whole cervix hangs down like a limp curtain around the os uteri internum. The appearances develope themselves gradually: 1st, softening; 2nd, elongation; 3rd, paralysis. The softening does not extend beyond the sphincter of the os internum. The elongation takes place not only from distension by the membrane and head, but also independently, as in placenta prævia and cross presentations. The paralysis is developed with the pending conditions as a progressive diminution of the contractile property of the cervix during labour. These three states are not explained by bruising and consecutive œdema of the cervical tissue, for they may be observed in abortion at the third month. Their relations to uterine contraction is unmistakable; they are recognised in uterine action from polypus. ('Monatssch. f. Geburtsk.,' 1869.)

Retarded labour from rigidity of the cervix uteri has been successfully met in these cases by the subcutaneous injection of preparations of opium. By Dr. C. W. Shaw ('Med. Press and Circular,' 1870), chloral hydrate has been successfully used for the same purpose (see *chloral hydrate*).

Labour obstructed by *cicatrix of the vagina* from a burn. E. W. Willoughby, M.B., relates a case in which a dense fibrous band resembling tendon in structures left by a burn occluded the vagina. Labour was induced at seven months. It was necessary to incise the cicatrix freely; the child then passed alive. ('Obstetrical Trans.,' 1870.)

From tumours.—Dr. Gibbs relates a remarkable case of a pilocystic tumour complicating pregnancy. A pluripara was taken in labour at term, and was delivered by forceps. Some days afterwards a tumour the size of a turkey's egg, firm, tender, movable, was discovered to the right of the uterus. About two months later it had increased to the size of the largest shaddock, and there was great suffering. Gastrotomy was determined upon. The tumour was fluctuating; a trocar

plunged in let off a pint of pus. The attachment was to the left broad ligament; it was secured by ligature, and the tumour with three inches of the Fallopian tube were removed. The tumour contained thick curdy pus and a mass of fine black hair. She recovered, and afterwards menstruated by the stump of the pedicle. ('Amer. Journ. of Med. Sc.,' Oct., 1869.)

Dr. Bixby relates a very remarkable case in which Dr. H. R. Storer *extirpated the puerperal uterus*, complicated with a tumour, by abdominal section. The tumour contracted the pelvis to such an extent as to leave only one and a half inch of space for passage of finger. It was decided to be impossible to deliver per vias naturales. It was determined to make a small exploratory abdominal section, so as to be able to tap the tumour should it turn out to be ovarian. It was found, however, to be a fibro-cystic tumour of the left and lower anterior wall of the uterus, with an outgrowth nearly the size of the fœtal head, originally pediculated, but now firmly adherent low down to the walls of the uterus. The uterus itself was much retroflexed. The tumour was cut into and found to be undergoing degeneration; profuse hæmorrhage set in. A child weighing 8 lb. was removed, it and placenta being also decomposing. The hæmorrhage continued, and the uterus had no power of contracting. There appeared no resource but to remove the whole mass as far as possible. A large trocar was passed through the upper segment of the cervix uteri, and a metallic cord passed through its canula, and the whole was firmly tied in two parts. The mass was removed by écraseur; the stump seared with hot iron and clamped. A portion of the outgrowth which adhered to the pelvic wall was necessarily left behind. The patient died on the fourth day. ('Journ. of Gynæcological Soc. of Boston,' Oct. 1869.)

Dr. G. Kidd relates an interesting case of *ovarian tumour complicating pregnancy*. The tumour occupied the brim of the pelvis at the commencement of labour, the membranes ruptured, and the tumour became tightly pressed into the pelvis; it was solid. After discussing puncture or Cæsarian section, it was determined to try to lift the tumour out of the pelvis by distending one of Barnes' bags in the rectum. This was done, the patient being placed on her hands and knees. This succeeded, and a living child was born. He relates another case in which the tumour did not get into the pelvis; the woman was delivered twice at term without accident. ('Dublin Quart. Journ. of Med.,' May, 1870.)

Dr. Leonard Sedgwick relates two very interesting cases of *fibrous tumour complicating pregnancy and labour*. A lady in her second pregnancy was much prostrated by obstinate vomiting; at the end the abdominal walls were like soft parchment. Towards the middle of the posterior wall of the uterus was a fibrous tumour as big as a walnut, and in its front were four more about the same size, firm, without stalk, and visibly projecting. She was delivered at term of a healthy boy: she then rapidly recovered. Pregnant a third time, and being very thin, accurate examination was easy. There was no inordinate morning sickness, and no tumour to be found; in several successive pregnancies no tumours could be found.

Case 2.—A lady, æt. 34, had large fibrous growths in the uterus, causing menorrhagia. First pregnancy supervened; when four months gone, after a sudden and violent movement she had acute pain in the seat of a fibroid. In the sixth month she fell down stairs; considerable hæmorrhage followed. At end of the eighth month the hæmorrhage returned; the left leg and thigh became swollen, hot, and congested; the femoral vein was hard, and apparently blocked up. Labour came at middle of ninth month. Furious hæmorrhage set in two hours after removal of placenta. A firm fibrous growth was felt protruding from the posterior wall of the uterus. Perchloride of iron stopped the bleeding. She recovered. Shreds of fibrous tissue continued to pass; one piece was as large as a walnut. In three months no trace of enlargement of uterus or of the tumour could be discovered. (These cases are of extreme interest. In the first it would seem that the fibroid tumours disappeared by a process of atrophy; in the second by disintegration and discharge.—R. B.) ('St. Thomas's Hosp. Reports,' 1870.)

Dystocia from tumours is discussed by Dr. E. Copeman ('Obstetr. Trans.,' 1870). He relates cases, one woman in her sixth labour; a tumour thought to be fibroid, occupied so much of the pelvic brim and sacral hollow that the head could not enter. Child delivered under chloroform with great difficulty by turning; dead. Vomiting and rapid pulse followed. Next day there was apparent improvement, but vomiting continued, and she died on third day. No autopsy. Dr. Copeman is inclined to attribute death to chloroform. Case 2 had a child two years previously delivered instrumentally. In second labour a large tumour presented in pelvis, hard, immovable, attached to left side of pelvis from symphysis to spine of ischium, almost filling cavity of pelvis. Turning was accomplished with great difficulty. The thorax and cranium were perforated, and by crotchet extraction was completed. No hæmorrhage. There was some evidence of pelvic inflammation afterwards, but recovery was good. The tumour remained.

By Dr. Wiltshire (op. cit.); a hard tumour had been growing from the crest of the right ilium for some time. It grew upwards. When pregnant the fœtal hand presented below it. Delivery normal. The tumour was considered to be fibro-enchondromatous.

By Mr. Tarn ('Obstet. Trans.,' 1869), who relates a case complicated with ovarian cyst which burst with a fatal result.

By Dr. Hall Davis (op. cit.), who in a case of ovarian cyst delivered the patient safely at term with the forceps. Dr. Hicks had seen six cases of pregnancy complicated with ovarian disease go through labour without trouble. Dr. Barnes referred to one case in which an ovarian cyst burst in the eighth month of pregnancy, causing death, and to another in which an ovarian cyst rolled over on its axis, twisting the pedicle and causing fatal hæmorrhage and peritonitis. When ruptures of the cyst occurred during pregnancy, he put the questions whether abdominal section should not be practised to remove the tumour? This and other questions are discussed (op. cit.) by Spencer Wells. He relates one case in which premature labour came on, and the cyst burst some time afterwards, causing immediate death. He relates a case in which rupture of the cyst having occurred at the fourth month,

he performed ovariotomy with perfect success, pregnancy being uninterrupted. He is upon the whole in favour of tapping the ovarian cyst in preference to inducing labour.

Dr. Hartmann relates a case of pregnancy complicated with ovarian tumour ('Mon. f. Geburtsk.,' 1869). The genitals became excessively œdematous, rendering scarifications necessary. Dyspnœa became excessive through the double pressure. It was determined to induce labour. A sponge was placed in the os uteri, then a catheter, and the labour took place. A child weighing 5¾ lbs. alive, was born. Placenta cast. The cyst grew rapidly after the labour, and the œdema also increased, so that it was necessary at the end of the ninth week to puncture the cyst. Recovery.

A case of labour obstructed by a fibrous tumour is related ('Obstet. Trans.,' 1870), by Dr. Braxton Hicks. The tumour presented before the head. He tried first to bring the child past the tumour by version. There being great uncertainty of success by cephalotripsy, he resorted to enucleation of the tumour. A small opening by a bistoury was made into the lower portion of the swelling; this was dilated, and enucleation completed. No hæmorrhage followed. The child was then delivered by forceps alive. The tumour weighed a pound and a half. The woman recovered.

Horwitz discusses ('St. Petersburg Med. Ztschr.,' 1868) the history of the complication of pregnancy with polypi. In relation to childbed, he says, the complication is dangerous to life, less through hæmorrhage than through metamorphosis of the tissues of the polypus. Expulsion following gangrene is very rare; inversion of the uterus also is rare. With advancing involution the polypus commonly shrinks, sometimes disappears. The most important condition of all has been little noticed. All the conditions for inflammation and thrombotic processes in the polypi are present; the inflammation spreads to the uterus, is developed in a highly vascular site, and leads to suppuration and its consequence—septic infection. To avoid these Horwitz urges prompt excision of the polypus. He relates four cases which confirm the foregoing conclusions.

Dr. Gervis relates ('Obstetr. Trans.,' 1869) an interesting case of labour obstructed by a large myomatous polypus. The tumour adhered to the whole circumference of the cervix; it became extremely tense with every pain, and some laceration of the surface occurred. One child was delivered after craniotomy, and a second by turning. The tumour after labour projected through the vulva; it was removed by écraseur five days afterwards. The woman died on the thirteenth day, symptoms of peritonitis having set in. Low necrotic inflammation was proceeding in the tumour.

Labour with cancer of the uterus is illustrated by a case narrated ('Journ. de Méd., &c., de Bruxelles, 1870). The patient died two days after labour. The author cites this case in support of the opinion that abuse of coitus is a cause of cancer.

Scanzoni relates ('Beiträge,' 1870) a singularly interesting case of pregnancy and labour, the uterus and ovaries being contained in the sac of an inguinal hernia. Labour came on in the fifth month. The case is related in much detail and deserves special perusal.

Dystocia from the Skeleton.

Dilatability of the pelvis is illustrated by the following case of a non-pregnant subject:

Dr. Awater exhibited to the Berlin Obstetrical Society the pelvis of a girl, æt. 18, who had died of typhus. The sacro-iliac synchondroses could be separated 2″: Professor Martin thought the change was of an inflammatory character. ('Monatssch. f. Geburtsk.,' 1869).

Dr. Winkler, of Jena, describes a remarkable *pelvis which can be dilated or contracted under force.* A girl, æt. 16½, was sent to him to ascertain her fitness for marriage. When a year old she had suffered a pelvic fracture by being run over. She was well built, could carry heavy weights, climb hills and work with ordinary facility. The dimensions of the pelvis were about normal. It was made out that the ascending ramus and horizontal ramus of the pelvic bone of the right side were completely wanting in bony matter, being replaced by a ligamentous substance. This substituted material could be pressed in or out by the fingers. When the legs were stretched apart, it became tense; and on bringing the legs together, it became flaccid. It was further ascertained that the right sacro-iliac joint admitted of movement. ('Arch. f. Gynäkol.,' 1870.)

Dr. Lange describes a peculiar case of *kyphotic transversely contracted pelvis.* The subject was thirty-four years old, of weak organisation, living in great poverty, learned to walk in her tenth year. The pubic arch was so narrow that it barely admitted the radial edge of the fore-finger. Cæsarian section was deemed necessary. A living child was extracted. Perimetritis and peritonitis soon followed, and she died twelve hours after operation. The pelvis measured at the inlet, the conjugate 4·40″, the transverse 3·90″; and at the outlet the conjugate scarcely admitted of measurement, the transverse gave less than 1·50″. The minute investigation of the case led Lange to the following conclusion: that the pelvis is a kyphotic transversely-contracted one, rachitic and one-sided, with complete anchylosis and fusion of the lumbar vertebræ with the sacrum at one part, with complete anchylosis of the articulating processes of the lumbar vertebræ, and of the last two thoracic vertebræ, with complete left-sided ileo-sacral anchylosis, with complete absence of the promontory, with carious destruction of the last sacral vertebra, with vaulting-over of the inlet by the lumbar portion of the spinal column, as in spondylolisthesis, and several osteophytes in the form of spines. ('Arch. f. Gynäk.,' 1870.)

Dr. Chantreuil describes ('Gaz. Hebd.,' 1870) two cases of *kyphotic pelvis.* The inlet was chiefly affected, the conjugate being increased.

Labour with transversely-contracted pelvis.—Dr. Kleinwächter relates a case of labour with transversely contracted pelvis in the Prague hospital. The subject, æt. 27, primipara, at term was in labour on the 18th December. The waters escaped on the 20th. The forceps had been tried before admission. The woman was well built, the bones, especially the pelvic, very thick. The fibres seemed symmetrical. The trochanters were distant from each other 10·50″. The width of the

pubic arch at the level of the union of the ascending rami of ischia, and of descending rami of the pubic bones was under 2·50″; the distance of the tubera ischia was 2·50″; the external conjugate was 10·75″. It was therefore evident that the pelvis was transversely contracted. The patient, being much exhausted, was delivered after perforation by the cephalotribe. It was reported that, when a child eleven months old, she had been let fall, so that her sacrum fell upon the edge of a wheel. The woman recovered, but died some weeks later away from hospital, so that the pelvis, which Schatz thinks would have matched Robert's, was lost. He cites seven other cases, showing that, in all but two, Cæsarian section was necessary. ('Arch. f. Gynäk.,' 1870.)

Dr. Schatz relates a case of transversely contracted pelvis arising from inflammation of the hip-joint. The subject was quite healthy until the age of fourteen, when she had inflammation and abscess of the right hip-joint. Chronic disease persisted for several years. Labour set in on 15th September; breech, assistance required, arms liberated with difficulty, head could not pass; the body was therefore separated in order to perforate the head; the cephalotribe was then applied, and the head delivered. On removing the placenta a considerable rupture on the left side of the uterus was detected. It was supposed this had been caused by the sharp end of the cervical vertebræ when the head was turned round and drawn down by the cephalotribe. Signs of traumatic peritonitis followed. A week afterwards a large quantity of pus flowed; suppuration went on for three months, during which time a firm tumour was felt in the left hypogastrium. The pelvis was carefully measured and a figure given. The conjugate diameter is 3·50″, the transverse is under 3·00″; the right side of the pelvis runs almost straight from the side of the promontory to the symphysis pubis. ('Arch. f. Gynäkol.,' 1870.)

Contraction of the pelvis is elaborately discussed from a practical point by Dr. Marchant ('Journ. de Méd., &c., de Bruxelles,' 1870-1). When the smallest diameter measures at least ninety millimeters, labour may still be effected, although slowly. He examines the influence of each different presentation of the head in this degree of contraction. He gives cases, amongst them several in which the head, arrested at brim, was brought down by the lever after the manner of Prof. Fabbri. In the second degree, when the smallest diameter measures from seventy to ninety millimeters, where the relations are well determined, it is better not to wait long before giving assistance. It is well, however, to let the head be a little fixed in the brim first. The forceps or lever will overcome arrest generally when there is eighty millimeters. Marchant dwells upon the deviation of the axis of the pelvis caused by the projection of the sacral promontory, and considers how the necessary backward traction by forceps, &c., can be effected. Some have curved the handle of the forceps again to obviate pressure upon the coccyx. Marchant, after Hubert, praises the lever as especially adapted to this case. The lever can be applied over the parietal region, and thus seizes the head in the most compressible direction, when under aid of traction, compression, and expulsion, delivery is accomplished. Herbirniaux, Boddaert, Coppée, Beytter, and other Belgian authorities are cited as

having proved the value of this practice. When the head is movable above the brim, Fabbri advises turning; Marchant says the forceps may still be tried when the contraction is at seventy millimeters, although the prospect is not so good. He then discusses minutely the question of turning, disputing the objections of Joulin. He cites a remarkable memoir by Dr. Roger from the 'Annales de la Soc. de Méd. de Gand,' 1868, who gives 106 labours—histories of 25 women with pelvic contraction to five or six centimeters. The following were the results: in 62 cases version only was practised, giving 43 living children; the forceps used nine times brought 9 dead children. In 9 cases labour was completed by turning after forceps had failed, 3 children being saved.

When the smallest diameter is from seventy to forty-five millimeters, here forceps, lever, and turning are useless, and should not even be tried; embryotomy or Cæsarian section offer sole means. As to Cæsarian section, he says, the physician is bound to prefer embryotomy if the mother demands it; he is bound to assist her. Perforation simple is insufficient below sixty-five millimeters. Three means of craniotomy exist—cephalotripsy, diaclasia, and sawing. He extols enthusiastically what may be called the Belgian method, that of Van Huevel, by the forceps-saw. (But it is difficult to be carried away by this enthusiasm so far as to hope that the forceps-saw can ever be applied to extreme cases. The blades require *at least as much* room as the ordinary forceps, whilst a good cephalotribe requires less, and the reporter's wire écraseur can work through the merest chink that will admit the finger to guide it.—R. B.) Marchant then discusses symphyseotomy, and argues in favour of it.

Dr. Hennig calls attention to the not infrequent projections formed behind the symphysis pubis by the eversion of the ossa pubis at the line of junction. This mostly happens in rachitic subjects, and may lead to dystocia. Hennig relates three examples. In one, he says, the excrescence disappeared during childbed.

Contribution to the knowledge of narrow pelvis in labour. By C. Martin. ('Arch. f. Gynäkol.,' 1870.)

Drs. Moers and Muck relate three cases of osteomalacia successfully recovered. The urine showed abundance of lactic acid. He used phosphate of lime, iron, and cod-liver oil. The two other cases ended fatally. The last was remarkable for the fact that, together with the osteomalacia disease of the bones of the trunk, the long bones, especially the femur and humerus, become greatly atrophied. ('Deutsch. Arch. f. Klin. Med.,' 5 Bd.)

Dr. Fasbender describes ('Mon. f. Geburtsk.,' 1869) a case of Cæsarian section on account of osteomalacia. The subject was pregnant for the fifth time. Osteomalacia had begun in third pregnancy. Her dwelling was damp; food, chiefly potatoes, coffee and bread. In labour, an endeavour was first made to open up the pelvis by the hand; this succeeded to a certain extent, but section became necessary. A living child was extracted, and the mother did well. Fasbender refers to other cases in which the pelvis was expanded by hand. It was stated on the authority of Dr. Levy, of Copenhagen, that osteomalacia was frequent

in a prison in that town where the women were fed on horseflesh; but it was admitted that other causes might have influence.

Dr. Ender relates ('Monatssch. f. Geburtsk.,' 1869) a case of *spondylolisthesis*. A woman, æt. 31, was admitted at the Maternity at Trier. She looked well-formed, exciting no suspicion that she had pelvic contraction. She had, however, over-hanging belly in an extreme degree. The promontory could be reached by two fingers. The external conjugate measured 7·50″; and in taking this the peculiar abnormality was discovered, for the sacrum projected strongly backwards, whilst, immediately over it, the lumbar vertebræ were pushed forwards. The woman said that two years before she had, whilst lifting a heavy basket, suddenly felt severe pain in the sacrum, which gradually subsided in fourteen days. The basket is the "*hotte*," or in German "*tragkorb*." In using it the person stoops as much as possible, so as to get the shoulder-straps over the shoulders, and then has to rise with the burden. During this act probably the vertebræ slipped forward at a spot previously diseased. Labour at term was waited for. The cervix dilated slowly; the head was felt with difficulty. After fifty hours the forceps was applied with great difficulty; strong traction was used, but no advance followed. The head was then perforated, and the child extracted. Fever set in after a few days. On the twenty-third day, on making an examination, suddenly a stream of pus escaped from the vagina. The patient died of irritative fever on the thirtieth day. There was found complete spondylolisthesis. The last lumbar vertebra had slipped down from the upper sacral vertebra about 3″ forwards; the lumbar spinal column was a little rotated, so that the right portion of the projecting anterior edge of the fifth lumbar vertebra was lower than the left. The lumbar vertebræ projected strongly into the pelvic cavity. No intervertebral cartilage could be discovered. The occasion had obviously been a caries of the bones.

Injuries during Labour.—Rupture and Laceration.

Rupture of the Uterus.—A remarkable case is reported ('Obstetr. Trans.,' 1869) by Dr. Greenhalgh, possibly, as suggested interrogatively, erroneous in diagnosis. A woman, seven months gone, while lifting a heavy weight, was suddenly seized with agonising pain in the belly, shock and collapse following. Peritonitis and signs of blood-infection. The membranes were ruptured, stinking liquor amnii flowed, followed by a fœtus much decomposed. The vomiting then ceased and recovery ensued.

Mr. Mitchell (op. cit.) relates the following: A pluripara, æt. 42, had mollities ossium. When seven months gone, she suffered severe terror and shock from lightning; instantly felt agonising pain in pelvis, fainted; hæmorrhage set in. On examination a rent was found in the uterus, 3″ above the os. The fœtus was extracted footling, dead. As the knee of the child lay in juxtaposition with the rent, it is probable that the uterus was torn by the violent contraction upon this projecting point, which occurred under the influence of fright. She died next day.

Rupture and laceration of uterus and vagina.—Mr. Stevens relates a case of rupture of the uterus, where the usual symptoms were postponed until twenty minutes after the accident. It was her fifth labour. Three conditions were present. The child was very large, weighing 13½ lbs.; it had been dead apparently some days; and the uterine wall in the seat of rupture which was in the anterior wall was extremely thin. ('Journ. of Gynæcolog. Soc. of Boston,' Nov., 1869.)

Dr. P. Young relates: A woman having had a natural labour, when at term again had protracted labour from unyielding cartilaginous os uteri. Laceration occurred through the vaginal portion of the cervix, extending to the lower part of the uterus, not involving the peritoneum. There was some hæmorrhage, but no marked symptoms. Child was extracted by turning. Woman did well till the fifth day, when, having been disturbed by nurse, profuse hæmorrhage occurred, causing death. ('Edin. Med. Journ.,' Jan., 1869.)

A case of spontaneous rupture of the uterus during labour.—Mr. Denton relates a case of spontaneous rupture of the uterus during labour. The patient was forty years old, in her seventh labour, the preceding labours having been of ordinary character. She was under care of a midwife, who reported that labour went on as usual from 9 p.m. to 2 a.m., when pains ceased and faintness set in. No ergot, it is said, was given. She quickly died. *Autopsy.*—A considerable quantity of bloody serum in cavity of abdomen; uterus at first seemed entire, but the peritoneum covering the anterior aspect was suspended, and underneath and visible through it, was a mass of coagula diffused between the peritoneum and the muscular portion, which towards the cervix was thin and attenuated. A longitudinal rent, several inches in length, was found in the anterior aspect of the uterus, not extending into the vagina, the edges on both sides being ragged and torn. The child weighed about 12 lbs. The placenta was detached. ('Brit. Med. Journ.,' 1870.)

Dr. Hicks discusses ('Lancet,' 1869) the mode in which laceration of the vagina is produced, in illustration of a case of alleged malapraxis in which the uterus was entirely separated, and came away with the placenta attached, inside, there being no inversion. He shows that the transverse or circular rent is effected by the uterus itself pulling upon the fixed or jammed vaginal ring.

Messrs. Paget and Denton, of Leicester, narrate in confirmation ('Brit. Med. Journ.,' 1869) a case observed by them. A woman was delivered after a labour of ordinary severity by a midwife. The placenta was removed with little traction twenty minutes afterwards. To this was attached the whole uterus, Fallopian tubes, and ovaries. The woman died in forty-five minutes. It seemed clear that the rupture was not caused by any violence on the part of the midwife. It is observed that no force can be applied to lacerate the uterus from its pelvic attachments until it is inverted, and wholly outside the vulva. In this case, as in the preceding, the uterus was not inverted.

Dr. Miller, however ("On Inversion," 1870), relates a case in which it would appear that the uterus, placenta included in it, was torn away

by the midwife inserting her finger inside the cervix. There was very little hæmorrhage, and the woman recovered.

Four cases of ruptured uterus are related by Dr. Barnes ('St. Thomas's Hospital Reports,' 1870.) In two of these the fœtus and secundines were removed by abdominal section. He especially dwells upon the evidence drawn from two cases that the previous death of the fœtus is a main factor in the production of rupture. A dead fœtus, having lost all resiliency, tends to be compressed into a ball, and becomes unfavorable for expulsion, thus inducing conditions of dystocia similar to that attending malposition.

Dr. Grenser ('Mon. f. Geburtsk.,' 1869) relates two cases of rupture of the uterus in which cephalotripsy was resorted to after turning. In one, the patient had undergone two hard labours. The true conjugate was 2″8‴; head presented. After forty-eight hours' labour severe pain was felt in the belly, and the head was no longer felt above the brim. A rent 3″ long was felt in the posterior wall of the uterus. The child was brought down by turning, and the cephalotriptor applied. The placenta which had escaped into the abdominal cavity was removed. Hæmorrhage great. Patient died two days afterwards with severe peritonitis. The uterine walls near junction of body and cervix were extremely thin. The rent ran longitudinally. *Second case.*—A rachitic woman had previously been delivered by perforation and forceps. The conjugate measured 2″6‴. Labour very slow; head movable on brim. In the midst of considerable pain the uterine contractions ceased, and the head was higher above the brim. A rent was felt to the right posteriorly, running from the body of the uterus through its neck to the vagina. Turning, extraction, and cephalotripsy were resorted to. Hæmorrhage great; peritonitis set in immediately, and destroyed the patient on the second day. Here, also, on section, a remarkable thinning of the womb at the site of laceration was found.

Dr. P. Müller, of Wurzburg, relates ('Scanzoni's Beiträge,' 1870) three cases of rupture of the *anterior margin of the vulva*, between the clitoris and the meatus urinarius. All were primiparæ, the presentation cranial. The importance of the observations lies in the severe hæmorrhage, in one case fatal, which is liable to attend this injury, the source of which may be overlooked. In all the cases there was perfect contraction of the uterus, and no injury elsewhere. Hence the indication, under similar circumstances, to inspect the part by the eye. (The liability to laceration at this part was observed by the reporter many years ago, and his observation was cited by Dr. Tyler Smith in that author's work on Obstetrics.—R. B.)

Inversion of the uterus.—J. W. S. Coward, New Zealand, relates a case ('Obstetr. Trans.,' 1870). Primipara; head presented, labour spontaneous. Whilst making gentle traction upon the cord, in a few minutes, with one or two violent expulsive efforts, the placenta was expelled. The uterus was inverted, placenta attached. The placenta was removed first, then the uterus was re-inverted. The inversion partly returned, and was again reduced. Recovery.

Dr. Madge relates (op. cit.) a case. A young woman in second labour, delivered of a very large child, the liquor amnii being excessive

in quantity. After the child was born, pressure was made on the abdomen. In gathering up the cord to remove the placenta, midwife found it had partially passed beyond the vulva; it was still adherent to a large, round, hard tumour, with a rough bleeding surface. This was the inverted uterus. The placenta was easily peeled off, no hæmorrhage. The uterus returned under pressure upon the fundus, with a "jerk." There was a little faintness, nothing more; uterus contracted well. Recovery.

Obstetric Therapeutics, including Operations.

On uterine expression to remove the placenta.—Dr. Chantreuil is an enthusiastic advocate of the method of effecting the removal of the placenta which (for want of adequate knowledge of British obstetrics) is attributed on the Continent to Credé. This consists in compressing the uterus forcibly by the hands on the fundus and sides of the uterus *immediately* after the expulsion of the fœtus. Chantreuil gives a summary of 540 labours in which this plan was resorted to. In 494 the placenta was expelled within three minutes after the child. (The principal difference between this recent continental advance in practical obstetrics and the practice long in vogue in this country, is in the *immediate* application of pressure. It is, at least, doubtful whether it is not better to allow a little time after the great effort made to expel the fœtus, for the uterus to recruit before interfering. Too early meddling is apt to excite spasmodic action.—R. B.) ('Arch. Gén. de Méd.,' 1870.)

Dr. Playfair relates two cases well illustrating the value of external pressure on the uterus in effecting delivery. ('Lancet,' Oct., 1870.)

Dr. Handfield Jones ('The Practitioner,' 1869) believes that *strychnia* has a valuable power of *promoting contraction of the uterus* after labour. He cites one case. He recommends 1-30th to 1-20th of a grain three times a day. This dose given to the mother, he thinks, is not dangerous to the suckling infant. In relation to the above, it is well to append an important observation made by George Harley ('Lancet,' 1869). A child, whose mother was taking strychnine in medicinal doses, had peculiar facial twitchings, and convulsive movements in other parts of the body; these ceased when the mother discontinued the medicine. The mother manifested no physiological effects.

Illustrating the same point is a report by Dr. Du Vivier ('Annales de Dermatologie,' 1869) on the use of *arsenic*. He treated two women for psoriasis. Both aborted at seven months of dead children. He believes this was caused by the arsenic; the women bore the dose, an ordinary one, perfectly well. Dr. A. Guérin had observed similar consequences from mercury. (It is, however, possible that the accident was attributable to the disease for which the remedy was given.—R. B.)

The use of *chloral hydrate* in obstetrics is illustrated by J. Gorson Da Cunha, of Bombay, who gave half-drachm doses in retarded labour in three cases. The effect appears to have been marked in allaying nervous irritation, labour soon proceeding favorably. ('Lancet,' 1870.)

By R. Dacre Fox, who gave it in one case of *puerperal convulsions*. The patient was a girl, æt. 15½ years only. Fits came on when head was on perineum. A decomposed child was delivered by forceps. The

fits increased; half-drachm doses of chloral were given. The fits decreased, and perfect recovery ensued. Whether there was albuminuria or not is not stated. ('Lancet,' 1870.)

By Dr. Head, who used it in a case of *puerperal mania*. The patient had been delivered of her fourth child. There was great restlessness. She took a drachm of chloral; this was repeated. She slept well. Recovery good. ('Brit. Med. Journ.,' 1870.)

Dr. Playfair refers to a case where the chloral seemed useful in averting puerperal mania. ('Obstetrical Transactions,' 1870.)

Mr. E. Lambert relates some observations made at the Edinburgh Maternity under Sir J. Simpson, on the action of chloral during labour. Eleven cases are narrated. He concludes that it may produce the same unconsciousness under labour as chloroform. Chloroform should be given during the second stage, chloral during the first. It does not suspend, but rather promotes uterine contraction. It shortens labour. The effects of chloral are continued beyond the period of completed parturition, and the repose experienced afterwards is a favorable circumstance. It is best given in doses of fifteen grains every quarter of an hour until some effect is produced. It sometimes produces vomiting. ('Edinb. Med. Journ.,' 1870.)

Dr. Saint-Germain has subjected to fresh experiments the use of electricity in labour. He never found uterine contractions excited when they had not previously set in spontaneously. When labour had begun, the conductors applied to the sides of the abdomen always induced acceleration of the pains. Dilatation of the neck was always rapidly produced. In every case the expulsion of the placenta immediately followed that of the child. In conclusion he says, without sharing the enthusiasm of Barnes as to the application of electricity, he thinks it ought to be fully investigated. (The reporter begs leave to add that his enthusiasm, if he ever had any, was only temporary. He fully proved in 1854 the power of galvanism to accelerate labour as well as to provoke labour. Whilst still thinking that galvanism may occasionally be of service, he finds that the indications it meets are much better accomplished by other means.—R. B.) ('L'Union Méd.,' Nov. 1869.)

Dr. Inglis contends for the superior advantages of applying the short forceps with the patient in the supine position. He places her close to and nearly parallel with the side of the bed. He says as objections to the lateral position, that there is great difficulty in keeping the patient's breech *over* the edge of the mattress; that it puts the perineum more on the stretch; and that it is necessary to force back the perineum to introduce the blades. (There are real advantages in the supine position; but the objections urged against the lateral position are void of force if a proper double-curved forceps is used. It is not at all necessary to drag the patient to the edge of the bed.—R. B.) ('Dubl. Med. Press,' 1870.)

Turning in contracted pelvis.—Dr. Hoening, of Bonn, relates an interesting case in illustration of this practice ('Mon. f. Geburtsk.,' 1869). A woman who had been delivered at term of six dead children, came under observation in four subsequent pregnancies. In each of these

labour was induced at about seven months. In two the child presented by the head, and was born dead; in two it presented by the breech or feet, and was born alive. Hoening says the adaptation of the first-coming head to the pelvis is small, and that the fear of compressing the cord when the head comes last is also small.

Dr. Braxton Hicks relates four cases of labour in which, on account of disproportion, *turning was employed to deliver after the forceps had failed.* Three of the children were born alive. He refers to other cases in which version was employed as a primary operation, with a view of saving the child; but dwells upon these four as proving, by a crucial test, the value of turning as a means of saving fœtal life where the forceps fails. No injury was caused to the mother. ('Guy's Reports,' 1870.)

Dr. Spiegelberg discusses the value of artificial premature labour. He inquires not only whether a child is born alive, but how long it survived; and thinks that, tried by this test, the operation is much overrated. He compares a number of cases in which labour was provoked on account of contracted pelvis, with others in which labour took place at term, and affirms that the operation is far from being so conservative to the child or to the mother as is generally believed. He submits that it should never be undertaken when the pelvis is not less than three inches in conjugate diameter. If the first indication for the operation, namely, the saving of the child where there is pelvic contraction, call for great restriction, so also is the second, namely, that of saving the child where there is habitual death of the embryo during gestation. Since this, he says, happens from hereditary syphilis, it matters little whether it dies unborn or shortly after birth; in any case it dies. There remains only the third common indication, namely, the saving of the mother, uncontested. Diseases depending upon, or aggravated by, pregnancy, give the most rational indication. (As might be expected, these propositions were not unanimously accepted by the meeting before which they were propounded. It is enough to state that many of the cases were observed in hospitals, where the patients are subjected to frequent examinations by students, and to various other injurious influences which endanger the success of the operation to mother and child.—R. B.)

Dr. Hegar observed that he had seen inflammatory affections of the uterus, and even fatal issue, result from injections into the uterus. ('Monatssch. f. Geburtsk.,' 1869.)

Induction of labour.—Dr. Brunton relates ('Glasgow Med. Journ.,' 1869) six cases, and states arguments in favour of Lazarewitch's plan of injecting water at the fundus uteri. In some cases labour set in immediately, in some as late as twenty-five hours after the injection.

Dr. Casati publishes the fifth of his series of 'Annual Reports of the Milan Lying-in Hospital,' of which Prof. Lazzati is chief. It contains the usual statistical summaries, and a special description of the results of the treatment of eclampsia by subcutaneous injections of atropine, morphia, and quinine. Five cases are reported; in three injections were used; symptoms of atropine action were developed, but the fits were not arrested. Casati thinks the method may prove useful as an

auxiliary, but that we must rely upon antiphlogistic treatment at the emptying of the uterus. ('Annali Univ. di Med. Milano,' 1868.)

Dr. Ruhstral describes a *breech-forceps*, and a case in which the instrument was used. It is 15¾ inches long; the blades measure to the lock 9 inches; they have the head-curve of the obstetric forceps corresponding to the width of the breech. The closed forceps has a space of 2¾ inches at the widest part of the bow. The ends which touch are 11 lines broad, and provided with a border turning in about ⅛th of an inch, serving to prevent slipping off. In using the instrument the blades must be applied only in the bend of the thighs. ('Monatsschr. f. Geburtsk.,' Jan., 1869.)

Dr. Duncan discusses the relative merits of the Paris model of the cephalotribe and of the Edinburgh model, by which it is presumed is meant Sir James Simpson's. From experiments and study of the mechanical properties of the two forms, he concludes that the Paris model crushed the head much more completely; that the blades came more closely together; that it is, in short, much more powerful than the short or Edinburgh model, the blades or handles of which are apt to bend under their work. Dr. Duncan has made some modifications in the Paris model, substituting the Brünninghausen lock for the French, diminishing the pelvic curve, improving the screw, and lessening the weight of the instrument. ('Edinb. Med. and Surg. Journ.,' Dec., 1868.)

Dr. Hyernaux relates ('Journ. de Méd., &c., de Bruxelles,' 1870) two cases in which he performed decollation or bisection at the neck on account of impaction after death of the fœtus from shoulder-presentation, by means of a whip-cord.

Embryotomy.—Dr. Barnes demonstrates ('Obstetr. Trans.,' 1869) his new method of embryotomy applicable in cases of extreme pelvic contraction. He employs a powerful wire écraseur. The loop of wire can be slipped up into the uterus, and, opening, it embraces the fœtal head, which has previously been perforated; section is then made, and may be repeated. Thus, the head may be quite cut up, so as to offer no resistance to delivery. The thorax may then have to be perforated and caused to collapse by dividing the ribs by scissors. The advantages of the operation are, that it can be practised where the deformity is so great that there is not room for the cephalotribe, and the whole force is expended upon the fœtus, the mother's structures being spared all pressure and contusion.

Dr. Oettler relates the history of a case in which he performed *Cæsarian section* four times in succession upon the same woman. She was extremely rachitic. The conjugate diameter measured scarcely two inches, the diagonal conjugate 2½ in. In subsequent operations Oettler made his incision on the side of the pre-existing cicatrices. Slight adhesions were found between uterus and abdominal walls. He also avoided the cicatrix in the uterus. The woman perfectly recovered. All the children were saved. On the last occasion the patient declared that menstruation ceased at the end of July, that a single coitus took place on the 9th August. Labour set in on the 9th May, giving 273 days as the term of gestation. (Complete success justifies the repeated

operations; but it may well be questioned whether, with a pelvis measuring 2 in. in the conjugate and 2½ in. in the diagonal diameters, it is not more in accordance with sound principle and science to perform embryotomy. The cephalotribe; the removal of the vault of the cranium, and extraction by the face; or sections of the skull by the wire écraseur, after the reporter's method, might all have effected delivery. —R. B.) ('Mon. f. Geburtsk.,' Dec., 1869.)

Dr. J. W. Roe relates an interesting case of Cæsarian section. Primipara. She had suffered from mollities ossium nearly four years; she had no abortion. Labour occurred (it is presumed) at term. A small but living and healthy child was removed; the uterus contracted and descended into the pelvis. She died four days after the operation. She had been some time in labour, and the pulse had been 120 the night previous to the operation. No attempt at union of the incision was found; the abdominal cavity contained some bloody serum; the intestines were glued together by recent lymph. The uterus was contracted; the edges of the incision made in it were everted, but the cut surfaces were glued together. The pelvis had the typical osteomalacic form. The great contraction at the outlet left no available space for working instruments at the brim. ('Lancet,' 1870.)

A case is related ('Obstetr. Trans.,' 1870) by Dr. Braxton Hicks. The pelvis was obstructed by a large myoma firmly attached to the pelvic wall. Blood was poured out very freely from the placental site and from the uterine wound. Perchloride of iron stopped the first. To stop the latter, silver sutures were used to close the uterine wound and to bring the uterus into contact with the abdominal wall. There were very large masses of myoma in the uterine walls. Violent vomiting harassed the patient, and she died three days after the operation. No extravasation of blood was found in the peritoneal cavity, thus showing the efficacy of the sutures employed.

Dr. Barnes describes ('Obstetr. Trans.,' 1870) a new form of suture, by means of which the uterine wound is closed and the uterus brought into contact with the abdominal wound, and which admits of being removed by the vagina when the union has taken place. It secures against hæmorrhage and the escape of fluids from the uterine into the peritoneal cavity.

Dr. O. von Franque describes a spinous pelvis (stachelbecken) in the Würzburg collection ('Scanzoni's Beiträge,' 1869), and gives the history of the labour. Labour being arrested by narrowness of the brim, and the child being dead, perforation and cephalotripsy were resorted to. Scanzoni's cephalotribe slipped, several crushings were effected, and at last, after protracted proceedings, the head was extracted by the hook. The child weighed a little over six pounds. The patient died the same night, diphtheritis of the uterus and vagina having set in. Autopsy: no injury to soft parts. The connective tissue of the fore surface of the pelvis at the left was rotten, as was that of the iliac fossa. The dried pelvis showed projection of last lumbar vertebra and promontory into the pelvis; the conjugate diameter gave 2″6‴, the transverse 4″6‴. A little to the right of the symphysis was a spine, on the left a sharp ridge. It was a rachitic flat pelvis. The ileo-pectineal tu-

bercle rose to the height of one line for a length of 1½‴ to an edge as sharp as a knife; a little further outwards a spine springing from a small base and nearly 2‴ long pointed towards the sacral region. (It does not appear that these sharp ridges or spines were the cause of laceration of the soft parts. The case is interesting as showing the imperfection of Scanzoni's cephalotribe. A good model, such as we now possess in England, would not slip. There are three modes by which delivery may be effected with a pelvis of even lesser dimensions than this one, with safety and with comparative ease, viz. by crushing and extracting with a good cephalotribe, by picking off the bones of the cranial vault, and seizing by the craniotomy forceps the edge of the base of the face, and by reducing the head by sections by the wire-écraseur.—R. B.)

Dr. O. von Franque describes ('Scanzoni's Beiträge,' 1869) the form of the pelvis in different races. He points out that the materials are very scanty. His memoir is based on the examination of—1. The pelvis of a flat-headed Indian of Vancouver's Island. 2. The pelvis of a Malay woman. 3. The pelvis of a Chinese woman. 4. The pelvis of a Negress. 5. The pelvis of a Papuan Negress of the Philippine Islands. 6. The pelvis of a Negress (?) from America; and with these he compares the pelvis of a female Gorilla. The first four and the Gorilla belong to the Würzburg museum. He first reviews the history or literature of the subject, citing the observations of Soemmering, 1785, Camper; Dr. Rollin who accompanied La Verouse, 1797; v. Siebold, 1821; Vrolik, 1820; M. J. Weber, 1839; J. Müller, 1834; Kilian, 1835; Busch, 1838; Hyrtl, 1853; Struthers, 1855, who describes the Esquimaux pelvis; F. Zaaijer, 1862, describes twenty Malay pelves; Joulin, 1864, describes the pelvis of a Negress, comparing it with that of the anthropomorphous apes; C. Martin, 1866, examined the pelvis of many varieties of race in the living; Goertz, 1868, describes the pelvis of a Bushwoman. He uses the descriptions of other authors as well as his own. The form of the brim of the pelvis is somewhat asymmetrical and longish oval. Starting with the European pelvis as a standard:—

	Conjugate diam.	Transverse.	Oblique.
European pelvis	107 mm.	136	127
Flat-headed Indian	120 „	142	135
Esquimaux	125 „	262	155
Malayan	116 „	126	122
Chinese	104 „	133	132
African Negro	104 „	112	111
Papuan	110 „	115	119
Gorilla	200 „	127	—

Von Franque confirms the remark of Joulin, "that notwithstanding all that has been said to the contrary, in all the human races, the transverse diameter of the inlet of the pelvis is greater than the antero-posterior. This is seen in the above table. The two diameters are nearly alike in the Papuan, but still the transverse is the longer. The excess of the antero-posterior diameter in the Gorilla is very marked. The Gorilla pelvis is striking by its elongated oval form. If compared with human pelves the differences of the Gorilla, as well as other an-

thropomorphous apes is very decided. The Malay pelvis is characterised by its delicate osseous structure, the strong inclination of the ossa innominata outwards, and especially by the small difference between the conjugate and transverse diameters, the transverse, however, still being the longer. If the Chinese pelvis be compared with the European pelvis, a difference can hardly be found; the resemblance is striking; the conjugate in the European is, however, a little longer. The Papuan pelvis is much smaller in all its dimensions than the European, excepting only the conjugate; and the whole pelvis is lighter.

Von Franque makes the general observation that the size of the pelvis appears to increase from south to north, and, on the other hand, that in the southern races the conjugate increases in its proportion to the transverse diameter.

The memoir contains full descriptions of the pelvis and measurements of every part. It has only been possible to abstract those of the brim. It concludes with some observations upon the peculiarities of labour in different races. These consist of quotations from travellers, &c., and are wanting in precision. The fœtal head in the different races must, of course, be studied in reference to the form of the corresponding pelvis. Upon this point there is little information. Vrolik says the Javanese bear easily because the fœtus has very little occiput. Struthers remarks that Esquimaux women have easy labours for the same reason.

Hæmorrhage.—The source of hæmorrhage is illustrated by a case related by Mr. Houghton ('Obstetr. Trans.,' 1869). The subject was eight months pregnant, when she suffered a fall. Violent hæmorrhage immediately set in, and destroyed her in forty minutes. The source was not clear; it was conjectured to be from a ruptured varix. The case is instructive as proving how rapidly fatal hæmorrhage may be under lesion of the turgid vessels of pregnancy.

Dr. Graily Hewitt describes an unusual cause of hæmorrhage (op. cit.). Peritoneal adhesions on the surface of the uterus prevented the organ from contracting and casting the placenta.

Dr. P. Müller, of Würzburg, relates ('Scanzoni's Beiträge,' 1870) three cases of hæmorrhage from *rupture of the anterior margin of the vulva*, between the clitoris and meatus urinarius. All the subjects were primiparæ, and the presentation cranial. The importance of the observations lies in the severe hæmorrhage, in one case fatal, which is liable to attend this injury, and the source of which may be overlooked. In all the cases there was perfect contraction of the uterus, and no injury elsewhere. Hence the indication under similar circumstances to inspect the parts by the eye. Great difficulty was experienced in stopping the bleeding. It persisted in spite of compression: an attempt to close the spot by two curved needles was frustrated; plugging was at last resorted to by cramming the vagina with sponges, and extending them to the rima pudendi; and to prevent these being driven out by coughing, he ran two sutures through the labia majora. The bleeding never stopped until these sutures were drawn tight. On the third day, the plugs were disturbed to pass the catheter. There was no more bleeding. On the fourteenth day, the seat of the rent was an oval granulating red wound-surface. Patient was profoundly anemic, but

gradually recovered. In the second case, hæmorrhage in a continuous stream was observed immediately after the birth of the child; a bleeding vein was seen in the split perineum, which was twisted. The bleeding persisting, blood was seen streaming from a rent directly behind the clitoris, from the mouths of two veins. Compression by the finger and with charpie steeped in perchloride of iron was fruitless; the two veins were seized with some trouble, and tied *en masse*. The bleeding then stopped. In the third case, the blood was seen by the midwife to stream over the child's head before it was extruded. Blood flowed in a copious stream from a rent between clitoris and meatus. It was stopped by two sutures through the wound. Transfusion was attempted, but the patient sank within twenty minutes after the birth of the child. An autopsy was made. The uterus was perfectly contracted; the cervix and vagina were quite uninjured; there was a slight perinæal laceration; at the anterior border of the vulva was a rent two and a half centimetres long, between the clitoris and meatus, and shallow; the bottom seemed formed of fine network tissue; no mouths of larger vessels were found. Dr. Müller concludes that the bleeding comes from the crushing and bursting of the overloaded pars intermedia of Kobelt. He observed that, in all the cases, the bleeding increased when the uterus was squeezed, which is explained by the blood being driven from the uterus through the vaginal plexuses. He has observed a similar increase of bleeding in rupture of the vagina when the uterus was compressed. (The liability to laceration of this part was observed by the reporter many years ago, and his observation was cited by Dr. Tyler Smith in that author's work on Obstetrics.—R. B.)

The treatment of post-partum hæmorrhage is discussed by Dr. Barnes. (op. cit.). He insists upon the great fact that hitherto all the means trusted to for the arrest of uterine hæmorrhage depend for their efficacy upon their power of inducing contraction of the uterus; hence, as a corollary, where contractility is exhausted, the art of the physician is exhausted too. Barnes shows that after contractility is gone, hæmorrhage may still be stopped by the topical application of powerful styptics, the most convenient being perchloride of iron. He exhibited ('Obstetr. Trans.,' 1870) a convenient apparatus for this purpose.

Dr. Lorain illustrates the effect of spontaneous and artificial bleedings. In a case of post-partum hæmorrhage the temperature fell to 36·8° C. In a case of puerperal convulsions free venesection after labour (convulsions persisting, albuminuria) was practised. Temperature in rectum before bleeding was 38·6°, pulse 136. Immediately afterwards the pulse was 160, the temperature had fallen to 38·3°. The patient recovered. In another case of puerperal convulsions, with albuminuria, the pulse was 128, temperature in rectum 39·6°, that is, 2° above the normal. 1200 grammes of blood was taken, approach to syncope attending. The good effect was immediate, convulsions ceased, consciousness returned. She was delivered a month later of a dead macerated child. The pulse fell to its natural standard in twenty-four hours; the temperature rose at first immediately after the bleeding to 39·8°, a slight rise being expected in syncope. It then fell in twenty-four hours to 36·6°.

Prof. Elliot relates a remarkable case of *thrombus*. The patient

was in labour with the first child. The pains continued active, and it seemed as if the child would soon be born; but it was discovered that the head had not advanced, and the vaginal walls and perinæum were enormously distended by a rapidly increasing thrombus. The forceps was applied; on drawing, the right labium cracked through the mucous membrane, and a large clot flopped out with such violence as to be projected a distance of three feet. The labium was then freely incised, and the open spaces were stuffed with lint steeped in persulphate of iron, and the whole compressed by a T-bandage. No more blood was lost. Anæmia was met by generous diet. The vagina was injected on the third day with weak carbolic acid. The patient did well. ('Amer. Journ. of Obstet.,' Nov., 1868.)

Dr. v. Haselberg reports ('Monatssch. f. Geburtsk.,' 1869) a case of *death from peritonitis consequent upon the injection of perchloride of iron into the uterine cavity*. The case is so completely observed, and so important, that it calls for full reproduction. A puella publica, thirty-two years old, having had an abortion at six months some time before, came under treatment with anteflexion of the uterus to such an extent as to render the passage of the sound difficult. The vaginal portion was enlarged, and an easily bleeding ulcer existed on the anterior lip, extending into the cervical canal. The sore was touched with nitrate of silver. Profuse bleeding followed, partly from varicose vessels surrounding the sore, partly from the uterine cavity; and even after the ulcer was nearly healed by the use of alum-plugs profuse menorrhagia occurred. It was therefore determined to try injection of perchloride of iron, but it was only after repeated trials that at last the syringe was got beyond the point of flexion of the canal into the cavity of the uterus. Immediately after the injection the patient suffered no pain, but in the night a severe rigor, with consecutive sweating, occurred. This was repeated every night, notwithstanding the use of quinine.

The patient quickly collapsed, even before signs of peritonitis set in. On the fifth night rigor was accompanied by severe vomiting, and immediately abdominal pain followed. In the following night, whilst vomiting, terrible pain suddenly came in the abdomen, whereupon she fainted and died.

Autopsy.—The abdomen was much distended. Being opened, a large quantity of stinking gas escaped. The intestines were united by recent exudation; the lower parts of the peritoneal cavity were filled with stinking pus of greyish colour. The source of this matter was discovered in a cyst of the right ovary, the size of a fist, whose walls had fallen in, and out of which, by pressure, matter of like appearance could be squeezed through a small opening. On the upper surface of the cyst the opening of the right Fallopian tube was found. From this a large sound could be passed the whole length of the tube into the uterine cavity. The mucous membrane of the uterus was stained pitch-black, as if with ink, and the same colour extended along the right tube to its outer extremity. The mucous membrane of the left tube was slate-grey. Pieces were taken from the uterus and the right tube, and were seen to be pitch-black for a depth of $\frac{1}{2}$ to 1 millim. Chemical reaction showed in these parts a copious infiltration with iron.

Small pieces of the surface were steeped in weak hydrochloric acid, whereupon the black colour disappeared. Prussiate of potash added to this solution caused a red colour, and sulphide of ammonium added to the neutralised solution caused a turbed black-grey colour.

V. Haselberg then discusses the features of the case and the precautions to be adopted in intra-uterine injections. He has derived the most signal advantages from the practice. Opinions differ widely as to the possibility of injected fluids passing along the tubes into the abdomen. The experiments of Hennig and Klemm on the dead body prove how difficult it is under normal conditions to inject through the Fallopian tubes.

On the operation of transfusion.—Dr. M'Donnell makes some interesting remarks on transfusion. He contends for its more frequent application. He advocates defibrination, and describes a convenient apparatus for the operation. ('Dubl. Quart. Journ. of Med.,' 1870.)

A secundipara was admitted at the Heidelberg Clinique with œdema, albuminuria, commencing labour, and convulsions. Delivery was accelerated by forceps. The child was dead, macerated. She was bled, had ice to head, glyster, morphine injections, chloroform, cold douche to head. After thirty-two fits, being in the highest degree exhausted, in deep sopor, transfusion was resorted to. Blood defibrinated was used; seven ounces was injected. The pulse rose; breathing became freer; cynosis disappeared; sleep followed. She recovered. ('Prager Vrtljhrsch.,' 1868.)

Dr. Schatz relates a case of transfusion which, although unsuccessful, is interesting, in that the introduction of defibrinated blood into the vein was frequently interrupted by coagulation, a circumstance Schatz thinks due (probably erroneously.—R. B.) to the coolness of the temperature of the injection-fluid. Section showed thrombosis and circumscribed phlebitis. ('Arch. f. Gynäkol.,' 1870.)

Dr. Gentilhomme relates a case of remarkable interest. A woman was delivered of her second child in May, 1864. At the beginning of 1865 she had a profuse flooding, which was renewed at the next menstrual epoch. A fibroid the size of a fist was found. The bleedings were repeated, so that extreme anæmia was induced, attended with the most threatening symptoms. Transfusion was determined upon. A healthy woman supplied 125 grammes of blood; the apparatus of Monroy was used. During the first moments of the operation nothing remarkable was observed, but when the stated quantity of blood had been injected the patient, whose cheeks had become red, cried out, "I am suffocating." Symptoms of asphyxia, thumping of the heart, general shivering, pains in the chest and loins, falling of the pulse which had previously risen, general coldness, vomiting, and great thirst, set in. These symptoms lasted two and a half hours, then gradually subsided; the breathing became easier, the pains went away, the pulse became strong and regular, 120, warmth returned. From this time she gradually mended, taking soup, chicken, and wine. Some time afterwards symptoms of peritonitis appeared, and pus flowed from the uterus. It was found that the fibroid tumour had been cast into the cavity of the

uterus, whence it was expelled spontaneously, hanging only by a slender stalk, which was easily separated. It weighed 140 grammes.

The author does not think the threatening symptoms attending the transfusion were caused by either air or clots. ('Gaz. Hebdomad.,' 1868.)

The Puerperal State.

Dr. Hémey made observations on 400 women as to *the pulse in childbed.* In 65 women out of 400 a retardation of the pulse was verified down to 60 or fewer beats. The retardation mostly set in a few hours after labour, and then remained equal for some days. The greatest retardation was on the second day. The course of the labour, if natural, had little influence. Every pathological disturbance brings quickly a rise in the frequency of the pulse. In 27 cases of saccharine urine, 15 gave a remarkable rise in the pulse (92—132) without other disturbance; 12 exhibited retardation. The milk-flow during the second to fifth days of childbed caused, in 280 out of 400, no remarkable alteration of the pulse; sometimes it caused a slight interruption to the retardation, but scarcely ever when the secretion was rich and the breasts full. The retardation holds in premature as well as in mature births. After-pains had no influence. Emotions, however, and gastric disturbances soon cause acceleration; in like manner, but very transiently, changes of posture act. Retardation, then, must be regarded as a favorable symptom. What is the cause? From the diminution of tension consequent upon the rapid suspension of the circulation of the blood in the uterus after the expulsion of the child.

In 94 out of 400 cases irregularity and inequality of pulse were found. The irregularity recurred every two or three beats, was observed from the first to the tenth day. Milk-secretion, duration of labour, death of embryo, after-pains, had little influence; but emotions and gastric disorder, by raising the frequency of the pulse, diminished the irregularity. ('Archives Gén. de Médecine,' 1868.)

Dr. Credé submitted to the obstetric section of the meeting of physicians, &c., held at Dresden in 1868, the general conclusions drawn from observations on the *temperature of lying-in women*, conducted for several years. The observations were arranged in groups. 1. Normal temperature, never exceeding 38° C. 2. Rising of temperature about the third day, with quick return to the normal, indicates milk-flow to the breasts, cracks of the nipples, slight bruisings and injuries of the genital canal, painful after-contractions. 3. Rising of temperature on the fourth, fifth, or sixth day, with speedy fall to the normal—generally constipation, at times no material cause, frequently errors of diet and psychical disturbances. 4. Rising on the fourth day, with longer continuance of the increase, generally over fourteen days, then slow return to the normal—complications of the milder puerperal diseases, with disturbances of digestion, or slighter exudations in the neighbourhood of the uterus. 5. Rising on the second, third, and fourth day, lasting for three to four days, then quick return to the normal—diphtheritic

deposit on the mucous membrane of the genitals, and slighter endometritis. 6. Rising on the sixth to the eighth day, lasting two to six days, then rapid return to the normal—breaking up and removal of thrombi from the uterine sinuses, the general condition being almost undisturbed. 7. Early remarkable rising of temperature, even in labour, or on the first or second day, long continuance of the rise without remissions —malignant diseases, ending either fatally or in tedious and exhausting convalescence, as endometritis, peritonitis, perimetritis, phlebitis, &c. ('Monatsschr. f. Geburtsk.,' Dec., 1868.)

Puerperal fever.—Dr. Braxton Hicks ('Obstetr. Trans.,' 1870) discusses this subject, taking the causes for his basis. He distributes 89 observed cases into two groups, the first including those having an ascertained or probable cause, the second those in which the cause was uncertain. In the first group 37 had a scarlatinal origin, the rash being observed in 20; 6 were erysipelas, 7 diphtheria, 2 typhoid, 9 decomposition of uterine contents, 1 emanations from a sloughy wound, 1 puerperal fever, 4 mania, 1 pyæmia from sore nipples. It thus appears that a very large proportion of cases of puerperal fever which occur out of lying-in hospitals are the result of contagion with some epidemic disease, the chief of which is scarlatina.

Dr. Hicks illustrates ('Brit. Med. Journ.,' 1869) the advantage of intra-uterine douche after labour to prevent and lessen the danger of puerperal fever. He adopts Dr. Barnes' division of puerperal fever into the *exogenetic* cases which arise from contagion of scarlatina, &c., and *endogenetic*, arising from poisonous discharges within the genitals. In almost all cases of puerperal fever he has found the lochia offensive. The injection he employs is permanganate of potash. (It should not be forgotten that in such cases Harvey injected the uterus.)

Dr. Hervieux, relying upon his experience as physician to the Maternité, states further conclusions as to the propagation of the *puerperal poison*. He affirms that cases are not very rare of sudden death without any appreciable lesion being discovered, and which are due to the terrible energy with which the puerperal poison works. In other cases the incubation is longer, and in others the organism is refractory to the agency of the poison. If patients who are the objects of repeated toxical impregnations are removed from the sphere of danger recovery is often rapid. Pregnant women invaded by the poison often are taken in premature labour, and symptoms manifest themselves during labour. The mode of propagation is by contagion. M. Hervieux always found that during the times when the pupils were absent at their examinations the number of cases of diseases fell remarkably, and rose when they returned. The explanation is simply that contagion by intermediaries was suppressed. He contends that overcrowding and other defective arrangements are of quite subsidiary importance, and believes that a hospital constructed on the cottage-principle, every woman having a separate room, would be equally open to the spread of infection. The only safe plan is domiciliary attendance, or distributing the patients at the residences of midwives. ('L'Union Méd.,' Dec., 1869.)

Dr. Tyler Smith relates a case ('Obstetr. Trans.,' 1869) in which he *injected ammonia into the veins* of a woman apparently dying. Following

Halford's treatment of poisoning from snake-bite, he injected a solution of one part of liq. ammoniæ to three of water, to the extent of half a drachm, into one of the veins of the forearm. When the operation was over the patient complained of great pain over the whole body. She soon began to mend; pulse fell from 135 to 100. A small ulcer formed at seat of puncture. She was convalescent in ten days. Mr. Wells stated (op. cit.) that he injected half a drachm of liq. ammoniæ into the veins of a woman suffering from pyæmia two days after ovariotomy. Scarcely more than momentary revival followed. A large fibrinous clot was found filling up the left ventricle.

Dr. Craig contributes a case of *puerperal tetanus*. The subject was thirty-seven years old, and had had seven children in Australia. In her eighth pregnancy hæmorrhage occurred twice from a varicose sore in the leg. She was delivered at term by a midwife, and attempts were made by the midwife to bring away the placenta; hæmorrhage ensued, and Dr. Craig was called in, who removed the placenta. The patient rallied and appeared to be doing well for more than a week; milk was formed copiously; pulse was 80, it was often 100. On the ninth day she complained of her throat. Difficulty in deglutition increased, and trismus was apparent. Next day she was much worse; the pulse was 130 to 140; opisthotonos was developed; she was perfectly conscious, and described her feeling as if a "ton weight was dragging her head backwards;" the "risus sardonicus" was very distinct. She died forty hours from the beginning of the attack. The case occurred in Edinburgh in November. The treatment consisted in aperients, fomentations to the throat, Indian hemp, turpentine enema. The fæces had a most offensive smell. ('Edinb. Med. Journ.,' 1870.)

Phlegmasia dolens.—Dr. C. C. P. Clark, of Oswego, lauds opium as the best remedy. He says it cures the disease. He gives it to the point of subduing pain. ('Medical Record,' 1870.)

Dr. Bailly gives a case of phlegmasia dolens; autopsy revealed general and suppurative peritonitis; a purulent collection in the pelvis behind the pubis; the principal veins of the left leg were completely obliterated by clots at the valvules; these clots were traced in continuity to the uterine branches of the hypogastric veins. Dr. Bailly deduces that phlegmasia dolens always proceeds from uterine phlebitis. ('Bull. de la Soc. Anatom. de Paris,' 1867.)

Dr. Hayden relates an interesting case of *pelvic cellulitis*. The subject, æt. 30, had been delivered three weeks of her first child when admitted. There was then no hectic, but marked emaciation, great tenderness over the abdomen, constipation. An enema tube could not be made to pass. In the course of a month the abdomen began to swell in a marked degree. The umbilicus projected and gave way, pus being discharged in large quantities. This flowed for a month so freely as to flood the bed. She sank. *Autopsy.*—The exact source of the pus was not determined, but it was considered to be a case of pelvic cellulitis. The uterus was free from disease. There was a great quantity of pus in the abdominal cavity proceeding from the right iliac fossa. The matter, before escaping through the umbilicus, had been free in the peritoneal cavity. ('Dubl. Quart. Journ. of Med.,' 1871.)

Pelvic cellulitis.—C. J. Cullingworth relates a case ('Obstet. Trans.,' 1870) illustrated by thermometric observations. The greatest rise was 105°, which took place at the commencement of the inflammation. With some fluctuations it fell in eighteen days to 101°. The highest pulse rarely corresponded with the highest temperature; it was 128. Throughout, this relation was tolerably preserved.

Mr. Begg relates a remarkable case of *gangrene of the four extremities following labour.*

E. R—, æt. 21, was delivered of a healthy boy on the 24th March, 1869, was admitted into the Dublin Infirmary on the 25th May. Labour was protracted; nourishment insufficient. She quite recovered from confinement, got about; when about six weeks after labour she was seized with an itchy sensation in both her hands; a little spot appeared on the tip of the nose, ears, hands, and feet, then numbness. She had about sixty-five grains of ergot in two doses during labour. She had always suffered from coldness in the extremities, even in summer. On admission, the marks of gangrene were manifest. On the 14th June lines of demarcation were formed. On the 17th amputation of both legs about the middle was performed. The anterior tibial arteries were found pervious as far as they could be traced. On the 9th July the arms were amputated above the wrist. The patient perfectly recovered. Mr. Begg does not think the ergot given during labour was the cause of the gangrene; there was certainly no ossification of the arteries, no heart disease. He attributes origin to her natural feebleness of circulation in the extremities, aggravated by poor living and the exhaustion following labour. ('Lancet,' 1870.)

Puerperal convulsions.—This condition is discussed and illustrated by cases by Dr. Hall Davis ('Obstetr. Trans.,' 1869). He believes the mortality from convulsions has been much diminished since the days of W. Hunter, stating that in the practice of Ramsbotham it was only one in fourteen, and in his own one in eleven. He attributes this to the better modern treatment and to the use of chloroform. In the sthenic form Davis favours venesection. If labour have begun, he advises rupture of the membranes only where there is reason to believe that the liquor amnii is greatly in excess. Otherwise, he recommends first to dilate the os by Barnes' dilators under chloroform. After narrating 35 cases, he analyses them. In 15 the convulsions occurred in the first pregnancy, in 8 they set in before labour, in 15 during labour, in 9 after labour; 18 cases were treated by bleeding, 7 by chloroform; 27 recovered. The 7 who took chloroform recovered.

Dr. Mendel relates the history and describes the condition found in *the brain of a woman who died in convulsions after labour.* In a first pregnancy the patient, æt. 26, who had always been healthy, was delivered by forceps. Three hours afterwards convulsions set in, with loss of consciousness. Consciousness returned in a few hours, but the patient continued for nine days completely speechless. There was no other kind of paralysis. Speech gradually returned, and at the end of the third week she appeared to have quite recovered. Two years later she was again delivered normally of a full-grown child. She went on well for a week, when, after a strong exertion, prolapsus uteri took

place, which the midwife reduced next day. Three days later general convulsions with loss of consciousness recurred. These lasted two hours; consciousness returned, but aphasia remained. There was no difference in the pupils, both acted under light; pulse 90; temperature 38·2. The tongue could not be projected through the teeth. Lochia present; not offensive. No albumen in urine; no œdema; no pain. Next day, suddenly, the convulsions were repeated, and were more marked on the right side of the face. Loss of consciousness complete. With increase of temperature sopor set in, and in the night, the temperature having risen to 41·2, death followed.

The calvarium had nowhere grown to the dura mater. The dura mater showed hyperæmia and plentiful Pacchionian granulations. The dura mater was closely adherent, especially on the right, with the arachnoid and the brain substances, so that with the membrane small shreds of brain were torn away. The arachnoid on the right was opaque, but in most parts separable from the brain; on the left the fissures of Rolando and Sylvius were filled with a purulent yellowish-white mass. On the summit of the frontal lobe was a scar-like contraction of the arachnoid. The white substance was very hyperæmic. In the left hemisphere of the cerebrum, outside and above the corpus striatum, was a cavity the size of an almond, containing grey pus-like matter.

The cyst extended to the scar-like depression of the arachnoid. No disease was observed in other parts of the body. It cannot be doubted that the cyst and scar were the residua of two hæmorrhagic effusions dating from the first eclamptic fit; the locality of them explained the aphasia. The psychical excitement attending the prolapsus uteri was the probable cause of the tissues in the neighbourhood of the cyst giving way. ('Monatschr. f. Geburtsk.,' June, 1869.)

Dr. O. Spiegelberg has submitted to experiment *the theory of Frerichs*, which assigns to ammonia, as the result of decomposition of urea in the blood, the production of convulsions. A primipara was seized with convulsions during pregnancy. The urine was loaded with albumen. Blood was drawn twice. After labour the patient recovered. The blood was received in two vessels, and quickly secured against air. One specimen was examined for ammonia, the other for urea. The first gave, by Kühne and Strauch's apparatus, distinct evidence of ammonia. A quantitative analysis was not made. The other gave 0·055 per cent. of urea. The urine gave 4·78 per cent. of albumen, and 1·1 per cent. of urea. There was, then, excess of ammonia and of urea in the blood, and diminution of urea in the urine.

To this observation in the human subject Spiegelberg adds some experiments made on dogs, to determine whether ammonia has the property of causing convulsion and coma when injected into the blood. Oppolzer had stated that carbonate of ammonia only acted as an irritant producing convulsions, not coma; whilst Petroff had confirmed the theory of Frerichs, that it was the cause of both. Spiegelberg's experiments consisted in throwing solutions of carbonate of ammonia into veins and arteries of dogs. They were four in number. The results went uniformly to prove the similarity of the symptoms, convulsive and comatose, with those observed in the human subject in uræmia. He

concludes that, in the case narrated, there was ammoniacal blood-poisoning in the sense of Frerichs. ('Arch. f. Gynäkol.,' 1870.)

Two cases of *puerperal convulsions successfully treated by chloroform.* Dr. E. R. Townsend, jun., relates two, which illustrate the action of chloroform in puerperal convulsions; but since the treatment was complicated, it can hardly be said that the beneficial action of chloroform is proved. The first case, that of a lady in the seventh month of her pregnancy, showed premonitory nervous symptoms. When convulsions set in the os uteri was closed. Cold affusion, then ice to the head, was used. Sinapisms to the legs and stupes of hot water. Pulse rapid and feeble. Calomel on tongue. Coma set in. Labour was, therefore, induced, and accelerated by Barnes' bag, forceps, and craniotomy. The chloroform was not given until after delivery. The effect seemed to be that, if given freely, just as the first sign of twitching indicating the approach of a fit, the fit was not averted. The patient recovered.

In the second case, that of a weak half-starved woman, in labour at term of her first child, the fits came on during the first stage of labour. Albuminuria. Coma followed the fits. Chloroform was given, and delivery effected by forceps. Hæmorrhage followed placenta. Ice was applied to the head. Chloroform was given so as to anticipate the full development of the fits. She had croton oil. The albumen disappeared. The patient recovered. ('Dubl. Quart. Journ. of Med.,' 1871.)

Dr. J. J. Phillips ('Guy's Hospital Reports,' 1870) contributes a clinical illustration of the comparative value of bleeding and chloroform in puerperal convulsions. Discussing first the opinions of authors, he argues against the idea that the immediate pathological condition of convulsions offers any indication for bleeding. He deduces from statistical grounds that the mortality from puerperal convulsions has greatly diminished since bleeding has been less frequently resorted to. He relates eight cases in which chloroform constituted the main treatment. He submits the following propositions:—(1) That bleeding has no claim to be regarded as a remedy for puerperal convulsions, and that in the majority of cases, at least, if seen at an early period of the attack, it is unnecessary. (2) That bleeding is often injurious by predisposing to various puerperal ailments, and sometimes by increasing the violence of the paroxysms. (3) That the chief reliance should be placed on chloroform, which prevents the recurrence or diminishes the violence of the paroxysms. (4) That in mild cases it is sufficient to keep the patient very slightly under the influence of chloroform in the intervals, more being given when indications of a fit are seen; but that in severe cases the patient should be kept for a time uninterruptedly under its influence. (5) That if the convulsions have already produced much pulmonary congestion, it is beneficial to withdraw a few ounces of blood before administering chloroform; and that generally it is advisable to lessen the tendency to cerebral congestion by the application of cold to the head. (6) That it is rarely necessary to interfere with labour before the os uteri is dilated, or in those cases where the convulsions precede labour; but that it is usually expedient in the second stage to complete delivery, due regard being had to the condition of the uterus.

Dr. Wiltshire relates a case of severe convulsions setting in with labour. Pulse 180; respirations 80 per minute; legs œdematous; urine highly albuminous; head presenting; membranes entire. She was put under chloroform. The cervix was dilated by Barnes' bags, and a dead child was delivered by forceps. Dr. Wiltshire is clear in his opinion that the fits were checked by the chloroform, and that by this and the acceleration of the labour the patient was saved. ('Practitioner,' 1870.)

Dr. von Seydewitz describes one case treated by chloral. The patient was epileptic, and fits came on some days after labour. Recovery followed. ('Obstetrical Transactions,' 1871.)

Dr. Bowsted relates two cases in which subcutaneous injection of two minims of Fleming's tincture of aconite and one third of a grain of morphia seemed remarkably successful.

Dr. Karl Schroeder discusses the *nature of fibrinous and placental polypi*. Reverting to the opinion of Kiwisch, that fibrinous polypi might arise from a kind of uterine apoplexy independently of conception, Schroeder cites cases in support of Scanzoni's view that fibrinous polypi only arise after abortion, and that the stalk is formed by decidua hanging to the uterine wall. He sets forth the doubt whether the uterus in its ordinary state will expand to allow the formation of a clot in its cavity. The uterine wall must be relaxed or morbid for this. In some cases, however, fibrin-polypi form after placenta has been entirely expelled; in these the fibrin adheres to the rough surface of the placental seat. When this occurs after labour, at term, or near term, hæmorrhage comes on in about a fortnight. Placental polypi may form when portions of placenta are left adhering, or when the entire placenta has been retained. The os internum uteri generally keeps open until the uterus is emptied, thus facilitating diagnosis. ('Scanzoni's Beiträge,' 1870.)

V.—*The Child.*

Dr. Crede describes and figures a remarkable example of *malformation of the fœtus caused by amniotic bands*, a condition first explained by the late Dr. Montgomery. He discusses minutely the conditions which might lead to the formation of these bands. He thinks that in the human ovum contractions of the uterus or powerful emotions may produce changes of volume, such as Darest produced in his experiments on hens' eggs. They surrounded the eggs with an air-tight envelope, or exposed them to changes of temperature, and thus often produced malformations. Darest, in this way, once produced a thread proceeding from the skull. ('Monatsschr. f. Geburtsk.,' June, 1869.)

Dr. Hennig describes ('Arch. f. Gynäk.,' 1870) a child eight days old exhibiting on both extremities contractions and amputations. He attributed the malformations to the action of amniotic bands.

Dr. P. Reuss discusses (Scanzoni's 'Beiträge,' 1869), under the title "Intra-uterine Spontaneous Amputation," the same subject. He reviews the literature of the subject. Since Montgomery, contributions

have been made by Simpson, Nettekovin, Simonart, Martin, G. and C. Brann, Barkow, Credé, Hohl, Nonancourt, and others. He examines the matter under several heads:

1. *Rudimentary reproduction of parts on the amputation-stumps.*—This is of interest in reference to the distinction between an arrest of development and a spontaneous amputation. This tendency to reproduction contended for by Simpson was disputed by Debout, who maintained that all these apparent reproductions were instances of arrested development. The possibility, however, of reproduction in man is supported by the case shown by Professor Bruns, of a man who, six years before, had undergone amputation of the right foot by Lisfranc's method, and resection of the middle bones of the left foot, and who had reproduced nail-structures in both scars. But Martin and Simonart suggest that this reproduction is only apparent, that a completely or incompletely separated limb may be affected by a *secondary arrest of development*, the cause of which may be a constricting agent. When there is constriction a hindrance to circulation exists, a diminution of nutrition, and an arrest in the development of the part below the constriction. If the separation is complete, the interruption of nutrition of the separated parts is complete, it shrivels, and at birth it is found not to correspond with the development of the child. Now, if a constriction be formed at a very early stage of gestation, then at birth the part below the constriction may be so undeveloped, and be so much behind in growth the full-formed child, that it may present the appearance for rudimentary reproduction, whilst it is in reality only a secondary arrest of development. These cases thus form a transition kind between arrest of development and spontaneous amputation; and the conclusion is founded that the presence of rudimentary parts has only a doubtful value in distinguishing the two.

2. *Can gangrene take place in the closed cavity of the ovum?*—This question is important in reference to the share of gangrene as a cause of spontaneous amputation, as accounting for what becomes of the amputated part, and especially to the process of spontaneous amputation. We must consider sudden interruption of the circulation from injury of the vessels from fracture, and gradual increasing disturbation of circulation through constrictions. The ordinary form of humid gangrene requires oxygen, and separated parts have been found quite free from decomposition. Against dry gangrene or mummification there is the circumstance that the fœtus is floating in liquor amnii. Then there is the observation that of cases of commencing spontaneous amputation and of the separated parts which, like the dead fœtus long retained in utero, only undergo a peculiar kind of softening and maceration, and which, all the same, fall into rapid decomposition when exposed to the air. Gangrene in ovo must, therefore, be excluded.

3. *Can a separated part in an ovum vanish, and when?* This question is the more important because the cases in which the separated part, where the presumption of spontaneous amputation was strong has been found, are rare compared to those where the separated part is not found. In unbroken abortion-ova of an early period, not seldom, no traces of embryo are found; the liquor amnii looks thicker and turbid, so that it

more than probable that a more or less complete solution of the embryo has taken place in the surrounding fluid. On the other hand, the dead embryo of the third, fourth, and fifth months is found in a state of maceration, shrivelling, as if it had long been immersed in a saline solution. In the last months the embryo is swollen, and all the organs softened. There can only be solution and disappearance of a separated part when the separation took place within the first three months. Wagner describes a human embryo of the third week, showing small buddings of extremities. As the very earliest time, therefore, in which the separation of a larger part of an extremity can happen is about six weeks, but the separation of fingers is only possible after three months, it is, therefore, easily understood how, from the softness of the parts during the first weeks, that constriction and solution of the constricted part may proceed rapidly. At any rate, when separation has occurred so early, at the time of labour, the healing of the stump will be complete. But when the separation of a limb has taken place in the later months, the solution of the limb is not to be thought of; it will be found that the healing of the stump is generally incomplete (Mäder and Martin's case). Besides the solution of the part, its smallness, its arrested development at an early period of its separation has been given as a reason why it is not found at birth. The separated part has, no doubt, often been overlooked.

A most important feature is the presence of a scar on the stump. This is a strong evidence of amputation. In cases where trace of cicatrix cannot be found it is possible that an original cicatrix may, with time, have lost its character; and in other cases the skin being drawn in by the constricting agent by a very gradual process, there may be but a very slight scar. Virchow stated, in demonstrating two cases, one of defect of fingers and toes, the other of a rudimentary finger, that he did not look upon spontaneous amputations as true amputations by special structures, but in most cases as the result of an inflammatory process, which through a cicatricial contraction at particular parts arrested their development.

Kristeller says that inflammation of the skin of the fœtus may lead to formation of cicatrix and contraction, and the presence of abnormal membranes or strings. In the case which gave rise to this inflammation, that of a strong developed child, the right hand wanted the third phalanx of the ring-finger, and the second and third phalanges of the middle finger. The thumb showed one, and the middle finger three, sharp grooves between which the finger was swollen. The amputation stump of the third and fourth fingers had grown to that of the index by a thick cicatricial cellular web. The left forearm was amputated two inches from the olecranon, the ends of the bones being rounded off. On the stump was a ball-shaped process attached by a thin neck, recognised as a rudimentary forearm with a hand, but no bones were felt in it. Its neck is surrounded by a firm cicatricial skin. Both feet showed similar defects. Missing parts were not found. Inflammation must have lasted until the end of gestation, for Kristeller found at birth redness. Inflammation of the skin does not necessarily produce bands or strings. Thus Oldham describes a fœtus which was covered by

a croupous membrane-like investment of inflammatory origin, resembling mucous membrane. Ollivier describes an ulcer on the surface of the legs. Friedinger showed a fœtus with symmetrical scars on various parts of its body. In two places were strong cicatricial contractions. So Kristeller's hypothesis may be accepted as explaining many cases at least. But it cannot explain such cases as hemicephalia with union of the skin of the cranium to the placenta.

Strings of inflammatory origin of folds of amnion.—Montgomery thought these were formed out of organized lymph, and Simpson that they arose from local inflammation of the integuments of the fœtus. Various explanations have been advanced. Inflammation of the amnion has been assigned. Gurlt suggested that these bands or strings were processes from that membrane of the ovum out of which the fœtus was developed, that is, from the umbilical vesicle or amnion. Gustave Braun considered it possible that folds of the amnion might entangle the limbs, and as facilitating this there may be deficient liquor amnii. Many cases are known of adhesion of the surface of the fœtus to its membrane. In illustration of this condition, certain aborted ova are interesting. Hegar often found this membranous bridge stretched between the walls or floating free. Lange possesses an ovum on several parts of the amnion of which is a plastic condition, and in one spot a free-floating projection. Dohrn describes an embryo nine to ten weeks old, with a string-like wrinkle on the left leg connected by a ligamentous string with the umbilical cord. Reuss thus relates thirty-nine cases in which strings or amniotic folds with their effects were observed. Comparison of these cases shows that where a string exists it may like the umbilical cord surround a limb, but no case is known in which there was complete surrounding of the neck or trunk. The string is generally too short for that.

Intra-uterine fractures.—This has already, in Mader and Martin's case, been considered as a cause of spontaneous amputation. Hippocrates believed that the bones of the fœtus might be broken by external violence. Rigby saw a similar case; but as a cause of amputation fracture is certainly rare.

Constrictions by the umbilical cord.—Cases of this kind are numerous. As might be supposed, examples of complete amputation from this case are wanting, because the necessary pressure upon the limb would stop the circulation in the cord. Sometimes the investing umbilical cord has been found adherent by plastic exudation with the constricted part of the fœtus. Rigby cites twenty cases in which constriction from the cord was observed.

Cases without any demonstrated cause.—The question has been put whether amniotic strings may not disappear. G. Braun thought this possible. Fifty-one cases are ranged under this head. (As this memoir contains almost the only full investigation of the subject, it has been thought desirable to analyse it in some detail.)

Spina bifida and hydrocephalus.—Mr. Amyot ('Med. Times and Gaz.,' 1869) relates a case in which the head burst. Dr. F. J. Brown (ibid.) relates a similar case which occurred under his observation.

M. Roux records ('Bull. de Thérap.,' 1869) a cure of very large

spina bifida sac by injection of iodine. Having made an exploratory puncture and drawn off about an ounce of the fluid, he had the tumour so held as to occlude the opening into the spinal cord; the following solution was then injected:—Water ʒxi, tincture of iodine ʒiij, iodide of potassium 180 grains. The liquid was left in the sac five minutes, the sac being kneaded by the operator's hand. The solution was then withdrawn to the last drop by the exhausting action of the syringe. In a fortnight there was only a hard nucleus left, no larger than a walnut. Roux contends that his success was due to the precautions he used.

A rare form of spina bifida, the sac projecting into the abdominal cavity, and of a size to present features in common with an ovarian cyst. By T. A. Emmet, M.D. ('Amer. Journ. of Obst.,' 1871.)

A case of spina bifida, presenting all the features of a lipoma, operated upon for the latter disease. By B. F. Dawson, M.D. (ibid.).

These two cases are of unusual interest.

Dr. McSwiney describes *congenital tumour of the head* in a new-born infant ('Dubl. Quart. Journ. of Med.,' 1870).

Dr. Wurster examines the *temperature of new-born children* ('Berl. klin. Wochnsch.,' 1869).

Dr. Schroeder discusses the question, *can the air be completely expelled from the lungs of new-born infants which have breathed?* One important bearing of the question is that, whether breathing must be taken to be the essential test of live-birth; and if so, whether breathing may have been effected without leaving any mark of expansion of the lung by air? He assents to the proposition of Maschka, that cases occur in which new-born children move and emit sounds and cries without it being possible to show air in the lungs; but he contends in addition that the children have breathed; that air had penetrated the lungs in the ordinary way, and had afterwards quitted the lungs, so that on section they were perfectly empty of air. In favour of this view he cites the evidence and opinion of Simon Thomas, who submits—1. That it is possible in new-born children for a greater or lesser part of the lungs to be penetrated by air, and then to return to the fœtal condition, causing the child to perish of slow asphyxia. Thus, we find sometimes in children which have cried strongly no trace of air in the lungs. 2. This condition occurs in premature children, and also in mature children when they are ill-developed. 3. The cause of this abnormity depends probably on the imperfect energy of the inspiratory muscles. 4. The absence of air from the lungs of new-born children is, therefore, no sure proof that a child has not lived and has not breathed. This is strenuously denied by Maschka, who says that if air has once fairly expanded lung-tissue it cannot be expelled by the elasticity of the lung-tissue. Schroeder contends that crying loudly is proof of breathing; and that hence, if no air is afterwards found in the lungs, it is because these have collapsed and expelled the air. He then puts another question: is it possible, and in what way, to prove that a child has lived when it shows fœtal lungs? He attached chief importance in this respect to the views of Breslau, who says that air is never found in the intestinal canal of children which have not breathed; and in fresh children, where air cannot

have been generated by decomposition, this, he says, is good. (The reporter, having made many close observations upon the main question in this memoir, is disposed to dissent from Thomas and Schroeder, and to agree with Maschka. He has seen many cases in which children have cried and in whose lungs no air could afterwards be found; but in these cases the children were premature or badly developed; the lungs were not sufficiently developed to admit air, even on insufflation, without lacerating the tissues. Such children are not viable, although they may have cried; they could not breathe in the full sense of the term. If observed during life, the chest-walls *fall in* towards the spinal column during inspiratory efforts, showing clearly that the lungs do not expand. It is enough to enable a child to cry that it take in air to fill the trachea and larger bronchial tubes. Such an imperfect respiration will keep the heart beating for a time.—R. B.' ('Deutsches Arch. f. klin. Med.,' 1869).

Asphyxia in new-born children.—Dr. C. Handfield Jones records a successful case of treatment. The child was laid on its back; pressure was made on its abdomen, then the child was raised upright on its seat, and so on alternately. This alternate pushing of the diaphragm upwards and its sinking compresses and expands the space for the lungs. ('The Practitioner,' 1869.)

Dr. Haake, referring to experiments made in Bonn by Schroeder, gives three cases in which he sucked out inspired fluids from the air-tubes. In two the child recovered; in the one that died section showed much meconium in the fine bronchi. A solid catheter was used. ('Mon. f. Geburtsk.,' 1869.)

5. Dr. Kehrer ('Arch. f. Gynäk.,' 1870) describes the three forms of *apnoe in new-born children*. In the asphyxia of the new-born the heart-pulsations are weak and long between. The pulsatory movements of the præcordia small. In *apnoe* there is a more widely-spread undulation of the chest-wall; the heart-beat is strong, of ordinary frequency; that is, there is continuance of placental respiration.

In *compression of the brain*, the heart-beat is variable. The treatment in apnoe is expectant; cleansing of the mouth and air-passages. In asphyxia, the quick use of excitation of artificial inspiration after sucking out substance by catheter. In brain-compression, besides irritation of the skin, a moderate bleeding from the umbilical cord.

Dr. Schwartz investigates *the effect of pressure and irritation of the skin upon the fœtus* ('Arch. f. Gynäk.,' 1870). Ludwig and Frankenhäuser believed that brain-pressure had a notable effect upon the heart's action through the irritation of the vagus. He made experiments on pups. The result of pressure on brain so conducted as not to injure the brain-substance or cause meningeal hæmorrhage was in apnœic subjects never to excite respiration, but to lower the heart's action, the lowering being immediate and marked, and the recovery to former frequency quick on remitting the pressure.

Skin-irritation, especially thermal and electric irritation of the cutaneous nerves of the abdomen, quickens the actual tranquil and dyspnœic respiration movements immediately, and promotes in the asphyxiated return of inspiration. On the other hand, they are wholly without

influence in the apnœic upon the respiratory centre. In whatever way and in whatever degree the skin-irritation is effected, the apnœa continues until the blood has become venous enough to excite the respiratory centre. Schwartz confirms what Donders observed, that the rhythmical contractions of the diaphragm are already in full play before the chemical irritation of the vagus appears by its influence upon the heart. In application to labour, Schwartz says the retardation of the pulse in the fœtus during the pains is due to the regular influence of the labour-pressure. The pulse retardation from labour-pains begins in 35 per cent. of all the cases during the stage of dilatation, in 46 per cent. first during the expulsion-stage, and is absent in 19 per cent., or only appears when the head is traversing the vulva. This is not limited to head-births, but is quite independent of the presentation. Schwartz has repeatedly seen it in uncomplicated cases of natural breech-labour up to the passage of the shoulders and head, and also in oblique presentations before as well as after the rupture of the membranes.

The prognostic value of this induced phenomenon is underestimated. In full a third of the cases in which the retardation returning with every pain has been perceived for some time before the escape of the head, this is not limited to the period of the pain, but continues between the intervals, and the child comes into the world more or less obviously affected in its respiration.

The *temperature-variations in diseases of children* are carefully investigated by Mr. Squire ('Obst. Trans.,' 1870). Typhoid fever in its ataxic form, when it presents the greatest resemblance to meningitis, is readily discriminated by the temperature, this rising from 2° to 4° higher in typhoid. In the sthenic form of typhoid an intercurrent bronchitis or pneumonia is accompanied by a greater temperature disturbance than would be caused by either of these complications, while the disturbance of the pulse and respiration is less than that met with in simple pulmonary disease. Dysentery and enteritis are readily distinguished even from the slighter forms of typhoid by their lower range of temperature. In scarlatina, though the disturbance of temperature is often extreme, it is insufficient for diagnosis. A temperature as low as 99° F. has been met with on the second day in a vigorous subject with full rash; in influenza, with no other complication than full tonsils, the temperature may continue at 101° till the fourth or fifth day; with ulcers on the tonsils, or herpes on the lip and face, the temperature on the second day may exceed 102°. A low temperature is often sufficient to enable a diagnosis to be speedily arrived at that otherwise must be uncertain or be delayed; a lad exhausted by fatigue and exposure might have been taken to have typhoid or scarlatina but for this test. In laryngismus stridulus the low temperature invariably accompanying the associated states of irritation and defective nutrition at once serves to distinguish the spasm from laryngitis. The indications of the thermometer often afford the first revelation of unsuspected disease—pneumonic consolidation, for example. Squire says he has frequently seen children forced to exertion and sent out of doors, when a single temperature-observation would have shown the necessity for rest.

Drs. R. Olshausen and H. Mekus describe an *acute contagious apyretic pemphigus in new-born children and puerperal women* ('Arch. f. Gynäk.,' 1870). The facts upon which their paper is based were observed in the Halle Lying-in Hospital. On the 2nd March, 1864, an infant five days old was attacked with pemphigus; it was strong and well nourished, weighing 9 lbs.; its mother was quite healthy. In the course of six days about six blebs appeared on various parts of the body and trunk, the palms and the soles of the feet being clear. The child's healthy state remained unaffected. On the 3rd March two other children were attacked, which also were perfectly healthy. After a considerable interval, and after these three children had left the hospital, a fourth was seized on the 5th April, and eleven days later two others. Ten other children, born in the mean time, escaped. Not one of the mothers showed sign of syphilis. The blebs ran their course in about twelve days. The principal seat was on the trunk; next, the extremities; the groins were mostly affected; the palms and soles always remained free. Olshausen and Mekus believe that the children did not infect each other, but were all attacked by the same unknown cause. The constancy of the seizures on the fifth and seventh days suggests the idea of an incubation of five days, and of infection beginning immediately after birth. The source suspected was the bath-sponge and bath-tub. The contagious character of these cases seemed clearly proved by a subsequent epidemic in 1869, when hundreds were attacked. The blebs were neither numerous nor big, but many children had from twelve to twenty-four. They were very quickly matured, so that where six to twelve hours previously nothing was to be seen, full blebs had formed. Most of them burst quickly. The thin secretion soon became turbid, and rarely formed scabs. The eruption commonly began from the fourth to the seventh day after birth. In two or three weeks the affection was at an end. The little patients were seldom feverish, and did not fall off in nutrition. Of special interest was the spread of the disease in the town. It was observed that it spread, and in very different degrees, in the practice of different midwives. In the practice of some nearly every child was affected, whilst in that of others a case was quite exceptional. In some instances the mother, as well as her infant, was affected. Olshausen and Mekus insist that this disease, sometimes called pemphigus infantilis, which is known to others, should be recognised as a distinct epidemic, because Hecker and others affirm that pemphigus only occurs in syphilitic children. From quotations from recent authors, as Plaskada (1865), Steffen (1865), Hervieux (1868), Plieninger (1854), Klein (1867), and others, Olshausen and Mekus conclude that this acute epidemic pemphigus in children, is not very rare. (The reporter described a series of cases resembling those to which the text refers, in the 'Lancet,' 1852, there showing that they were not syphilitic, and were probably contagious.—R. B.) Olshausen and Mekus ventured to make some inoculation experiments. They inoculated the thigh of a child already attacked with pemphigus, and with fluid taken from one of its own blebs. Other experiments on a man and animals gave no results.

Dr. Hervieux ('Journ. f. Kinderkrankheiten,' 1870) relates the

history of an epidemic of pemphigus which prevailed in the Paris Maternité during two years. It began with one child, which was removed from the lying-in wards to the children's ward. There was no evidence of syphilis in itself or in the history of its parents. Very soon almost all the children amongst whom it was brought became affected. The bullæ appeared on all parts of the body, the palms and soles alone escaping. Dr. Hervieux made trials with the secretion from the bullæ to inoculate, but without result. Dr. Hervieux does not doubt the contagious character of the affection, but does not point to any special means of contagion. He is disposed to think it may be a variety of varicella.

J. F. Goodhart relates ('Brit. Med. Journ.,' 1870) a history which confirms the preceding. A suckling had an eruption of pemphigus on the tenth day, it lasted only a few days; then a sister two years old was affected, then a brother aged four. Father and mother remained unaffected.

The 'Revue Médicale,' 1870, gives an interesting case of *fatal smallpox in a child twenty-seven days old which had ten days before been vaccinated.* Two places were developed. The vesicles were very fine, and, therefore, largely used for revaccinating other persons. Two days after this was done variolous eruption broke out on the infant. The greater number of the persons revaccinated from it took well, but in none did any signs of smallpox appear.

Animal vaccination, or vaccination direct from the heifer.—It is deserving of record that this practice has been pursued in London by Dr. Blanc and Dr. Ballard, who both speak favorably of it. Dr. Ballard says the animal virus takes a longer time to go through its stages of evolution than the human virus. He says that, like the humanised virus, the animal virus keeps better on points than in tubes. ('Lancet' and 'Med. Times and Gaz.,' 1869.)

In a discourse delivered at the Académie de Médecine, M. Guérin discusses the modern views upon vaccination. He makes a triple distinction:—1. Jennerian vaccination. 2. Human. 3. Animal vaccination. He insists that, in any case, the cow-pox serves as the basis; but that in one case it is inoculated, in the other it is spontaneous. Jenner never inoculated direct from the animal to man, he simply used spontaneous cow-pox. Cow-pox must not be confounded with animal vaccination. Animal vaccination is slow in production, therefore the virus is less energetic, or finds a soil badly prepared for its germination. Its course is shorter, therefore the virus is weaker. The period of virulence is ephemeral, therefore the vitality of the virus is less. It is very difficult to preserve; you must go back to the beast; therefore it is less active, less prompt, than in the Jennerian vaccine, which may be indefinitely preserved. As to the last question, the comparative protection afforded against smallpox, the facts relating to animal vaccination are as yet too few. Time is wanting to prove its efficacy; but no one doubts that the question is settled as to the efficacy of the Jennerian vaccine. ('Revue Médicale,' July, 1869.)

Dr. Seaton ('Twelfth Report of the Medical Officer of the Privy Council,' 1870) examines the subject. His investigations were carried

on in Paris, Brussels, Rotterdam and Amsterdam, in 1869. With reference to the *transmissibility of cow-pox unimpaired from calf to calf*, the evidence is conflicting. M. Lanoix said that since he first brought his calf from Naples in 1864 he had never failed to continue the disease by inoculation. It appears, however, that a certain amount of skill is necessary, for M. Warlomont states that now he succeeds perfectly, whereas at first his unsuccesses were so numerous that, had he been determined by his first year's work, he could not but have abandoned the practice. Moreover, at Rotterdam Dr. Bézeth reports that after two or three months the eruption on the calf became much less pronounced, and the results on the human subject were frequently imperfect and abortive; fresh lymph was obtained, which in every case seemed to undergo a similar deterioration, resulting in these constantly and almost periodically renewed features, for which there must be some cause other than the peculiarities of the animals used.

The character and course of the pocks produced on children by animal vaccine lymph were carefully studied in Paris and Rotterdam. The pocks had the same character, ran the same course, and manifested the same varieties as Dr. Seaton was in the habit of seeing produced at the public vaccination stations in England.

In order to enable us to arrive at a conclusion as to the *comparative success of vaccination with animal and with humanised vaccine lymph*, the author gives the following results of the two modes of practice on children in the Paris hospitals, from the 1st of October, 1867, to the 30th of October, 1869, inclusive, and in Rotterdam for the year 1869:

	Total cases.	Proportion per cent. of inspected cases unsuccessful.
PARIS—		
From heifer to arm	7000	21
From arm to arm	3119	7
ROTTERDAM—		
From heifer to arm	542	12·3
From arm to arm	610	0·65

"So far, then, as evidence at present goes," to quote the words of Dr. Seaton, "it appears quite clear—(1) that the present degree of success attending the practice of animal vaccination is, in comparison with the success attendant on vaccination from arm to arm, very low, and such as to constitute a most serious drawback to its use, supposing that other reasons were deemed sufficiently strong to render its introduction as an alternative proceeding desirable; (2) that much training and experience are indispensable to the attainment of even that degree of success which at present attends it. If practised and most scrupulously careful vaccinators, anxiously endeavouring to make their experiment successful, and neglecting no known precaution for the purpose, find after two years' experience that in vaccinating direct from the heifer to the arm they are obliged, in one eighth of their cases, to vaccinate a second time before they can produce any effect, and that in the end very nearly one fourth of the children who are infected in this way

are sent out with that imperfect degree of protection against smallpox which is afforded by only one or two vaccine vesicles, it must, I think, be obvious that by the adoption of such a practice we should be greatly weakening our defences against smallpox. The chance to each individual of a full protection would be very largely diminished, and the danger to the community of spreading smallpox greatly increased by the number of half-protected persons thrown upon it."

With regard to the *preservability of animal vaccine lymph*, Dr. Seaton found that the heifer lymph, as compared with ordinary lymph, is peculiarly apt to spoil on keeping, and that the tube-preserved lymph cannot be relied on.

Dr. Grancini ('Annali Univ. di Med.,' 1871) gives a report on the animal vaccination practised in Milan in 1870. He concludes that the results were generally good, in no respect inferior to vaccination from humanised lymph. It has, moreover, the advantage of not giving rise to the propagation of human morbid germs.

In Italy the practice has found more favour than elsewhere, and seems to be still extending.

Prof. J. Steiner and Dr. N. Neureutter ('Prag.Vjhrschr.,' 1870) have made the *diseases of the urinary organs in childhood* the subject of extensive and close study. *a. Congenital diseases.*—In two cases there was absence of one kidney, in both cases it was the left that was missing. *b. Acquired diseases.*—In one case, *diminution of size* of one kidney was observed as the result of pressure of an enormously enlarged amyloid degenerated liver. *Hyperæmia.*—This is more frequent than anæmia. Arterial and venous hyperæmia was most frequently observed in lung and heart diseases. And this condition of the kidney is still more marked when, in addition to the lung and heart affection, there is thoracic deformity, as rickety. After death from scarlatina, measles, smallpox, cholera, and typhus, hyperæmia of the kidneys is almost always seen. In tetanus, chorea, and convulsions, hyperæmia is found. Beckmann's proposition that children suffering from diarrhœa and atrophy have, in consequence of the diminution of the energy of the heart, kidney hyperæmia, with the not rare exceptions of children who are very much prostrated, when kidneys like other organs are anæmic. *Anæmia of the kidneys* is the consequence either of a disturbance of circulation, or is part of general anæmia, or result of a purely local parenchymatous disease of the kidney. *Ecchymosis* is a not uncommon form of hæmorrhage in children. In no case was the effusion so copious that it could be called renal apoplexy. It is rare in the absence of disease of the parenchyma. It was most intense in cases of purpura and variola hæmorrhagica. In one case of the latter disease marked hæmaturia was observed during life. The same conditions were found in some cases of scarlatina, croupous pneumonia, scrofulosis, tyrosis, and tuberculosis of the lymphatic glands. The causes of the hæmorrhage in these cases must be sought partly in disturbance of circulation, partly in alteration of the blood and in the texture of the blood-vessels. In one case there was intercurrent hæmaturia, with tubercular meningitis, in a girl six years old, lasting some days, but disappearing when the symptoms of brain-compression had reached

their acme. As autopsy revealed fresh tubercles in the lungs, liver, and spleen, as well as in the meninges, the intercurrent hæmaturia must have occurred at the moment when, in consequence of tubercular development in the kidneys, the disturbance in circulation and hæmorrhage took place in the renal canals. In a case of a girl aged 2 years hæmaturia appeared; immediately before this, the child had been leaping about the room, and the author believes the renal hæmorrhage was due to the increased blood-pressure caused by the forced movements. In a boy, hæmaturia was observed in the course of a chronic exanthema (pemphigus), which returned from time to time.

Bright's disease.—Numerous dissections have convinced the authors that this disease is far more frequent than is generally believed. Its presence was established by autopsy in 265 cases. The acute form was observed 213 times, the chronic 52 times. The acute was more frequent in girls, the chronic in boys. The stage of hyperæmia and exudation was seen 53 times; the stage of fatty degeneration 160 times; the stage of granular atrophy 6 times. Hyperplasia of the interstitial connective tissue was also observed, but never in the high degree seen in adults. Of the 265 cases the disease was primary in 5 only, secondary in 260. The symptoms are modified by individuality, by the complicating disease, and the opinion of Lebert and Vogel was confirmed that the symptoms can do no more than indicate Bright's disease; they cannot indicate the degree or stage. The quantity of albumen in the urine is greater in the acute forms. The persistence of albumen does not warrant the conclusion that the disease is extending, since albuminuria is frequent in children without Bright's disease. Its presence is important when blood-corpuscles are also found. This is often the first sign in children; the quantity is never great. Pus-globules are only found in complications, as in pyelitis, uretritis, and purulent nephritis. Nucleated cells are found only when the case is lapsing into fatty degeneration. Epithelium of the renal canals and casts are like blood-corpuscles of the earliest sign. In scarlatina they are often found in the beginning of the disease and whilst the rash is still out. When the quantity is considerable it may cause obstruction of the renal canals, hindrance to the circulation, exudations, and lead to development of Bright's disease. In the form attending scarlatina, in most cases, the straight canaliculi are involved, and since the removal of the desquamation from these is facilitated by the flow of urine behind, the favorable course of these cases is explained. Kidney-cylinders, or fibrinous casts, are found in childhood, but rarely in great quantity. Blood-cylinders and granular cells and granular detritus occur. Diuresis is commonly sparing, the urine is richer in colouring-matter, urea and uric acid, the more acute the form of Bright's disease. Fever is never absent in the acute forms; it is less marked in the subacute, and almost wanting in chronic. The pulse not seldom falls below the normal in chronic Bright's disease, and becomes irregular. Dropsy is frequent, but not a necessary symptom. It sets in sometimes rapidly, accompanied by marked uræmic symptoms, or it comes on quite insidiously. The cause lies in degradation of the blood, and in the spontaneous escape of blood serum. The authors saw copious albuminuria precede the dropsy, in

other cases the two things appeared together, or the albuminuria was so scanty that the dropsy could not be referred to it. Headache is constant in older children, generally in the forehead. Convulsions, partial or general, are a further sign. They either usher in the kidney disease, and are then, even if severe, not of bad prognosis, since they mostly vanish when the secretion of urine becomes more copious; or the convulsions set in at the end of the Bright's disease, in which case they are almost always the forerunner of death. Concurrently a more or less marked torpor or comatose state lasts until collapse and death. Delirium is rare in children under four, but appears as a rule after five. It disappears with increasing diuresis or advancing coma. Complete blindness has been observed in some cases of scarlatinal Bright's disease, lasting two or three days, or until death. One case of hemeralopia in acute Bright's disease was observed. The anatomical basis of this affection, according to the degree and duration, lies in a transitory attack of the retina by hyperœmia or œdema, or in a profound alteration, as inflammation, or ecchymoses. Other complications are various diseases of the digestive organs, or chest; croupal affections of the mouth, œsophagus, bronchial catarrhs, pleurisy, and lung-tuberculosis. The last complications may easily lead to error, when, in a chronic nephritis, the dropsy failing, an accurate history or good analysis of the urine is not to be had. The author has frequently noticed hypertrophy of the left ventricle, and more frequently in chronic than in acute Bright's disease. The only subjective symptom, and this only in elder children, is tenderness or pain in the region of the kidneys and down the course of the ureters.

The causes of nephritis are remote and proximate. Of the first are those which affect the kidneys directly, as falls, blows, misuse of diuretics. The indirect causes are scarlatina, measles, variola. The frequency of the complications of scarlatina with Bright's disease varied with the character of the epidemic. It ranged from 30 to 6 per cent. In tuberculosis and scrofula, of 105 cases after protracted suppurations from bone or joint-disease, in 22 Bright's disease appeared.

The frequency of Bright's disease in infancy is further illustrated by Dr. Adolph Kjellbing ('Journ. f. Kinderkr.,' 1870), who, after citing the dicta of Billard, Valleix, Bouchut, Vogel, and Gerhardt, as to its extreme rarity, says the numerous autopsies he has made in the Stockholm Children's Hospital, during an epidemic of measles, gave him frequent occasion to observe a parenchymatous inflammation in the kidneys. He then observed the same changes in the kidneys produced by several other diseases. Especially was this the case in catarrh of the intestines. During the six years 1863-8, 696 children exhibited, in 126, parenchymatous nephritis as a complication; that is, 18·10 per cent., and of these 126 there was not one case following on scarlatina or measles. In 33 out of 260 cases of pneumonia, nephritis was found after death; in 4 out of 34 cases of croup and diphtheria; in 4 out of 24 cases of meningitis; in 3 out of 22 cases of erysipelas; in 4 out of 22 of puerperal pyæmia; in 9 out of 31 of syphilis; and in 67 out of 143 fatal cases of intestinal catarrh, acute and chronic. The author passes rapidly over other diseases to consider more especially nephritis

as a complication of intestinal catarrh. This complication, he says, is more frequent in very young than in older children, and gives to intestinal catarrh in infancy a peculiar character. He relates illustrative cases in detail. He points out incidentally the value of digitalis where there is diminished secretion of urine; in one case great benefit was derived from wrapping a cloth soaked in tincture of digitalis round the body. He remarks that the parenchymatous kidney-disease in little children does not always attack the cortical substance in its totality, but sometimes only the greater or a smaller part. When nephritis complicates intestinal catarrh, the following symptoms are observed:— A child attacked either suddenly or slowly by diarrhœa, with green, coagulated, watery or grey, mucous, offensive evacuations, is collapsed in more or less complete sopor or coma, with half-shut eyes, the visible part of which is often covered with mucus, the cavities of the eyes are somewhat swollen with œdema; the eyes are deep sunk; the pupils react feebly to light; the naso-labial fold is strongly projected; the nose is cold, pointed; the fontanelles sunken in; the neck is at times bent backwards, and the occiput is bored into the pillow; the veins of the head are more prominent than normal; at times the child cries and screams with a sharp voice, and emits motiveless piercing shrieks, and falls into convulsions; the mouth is half open, the tongue dry; vomiting; the abdomen, at times stretched, is generally sunken in, soft; respiration is retarded and uneven; the skin cool, dry, tough, without elasticity, so that a fold pinched up remains without smoothing down; the extremities feel cold, the legs are often stretched out and stiff, at times œdematous; the secretion of urine is scanty, it contains albumen in greater or less quantity, and exhibits in the sediment dark and fine nucleated and hyaline cylinders, sometimes a quantity of small round cells, scattered or gathered in heaps. In the more severe acute cases the child is restless, has fever, accelerated pulse, and hot skin; it draws its legs up on its belly, and utters shrieks of pain, and exhibits such sensibility that it cannot bear the least touch; with all this the child is somnolent and indifferent. The cause of these symptoms is the rapidity with which the intestinal catarrh sets in. The fever and shrieking may be due to the intestinal pain; and the last may be caused by the influence which the progress of the disease exerts upon the brain and nervous system, and in the same manner the skin-hyperæsthesia may be explained. But as to the somnolence and indifference, it is difficult to say whether it is occasioned by the prostration due to the rapid discharges, or to commencing nephritis, or perhaps to both together. Sometimes somnolence and albumen in the urine come on together. In reviewing the symptoms above described, it is difficult to distinguish which are due to the intestinal catarrh and which to the kidney complication; also, it is doubtful whether the nervous symptoms are due to morbid conditions of the brain or of the kidney. Autopsy throws some light on the question. In the brain there is found anæmia or hyperæmia, or a normal amount of blood; œdema in the meninges, either with hyperæmia or anæmia. In the kidney, on the other hand, there is always a parenchymatous inflammatory process, in many cases very advanced. This leads to the conclusion that, since the brain

alterations are variable, whilst the symptoms and the kidney alteration are constant, it is to the kidney the symptoms must be ascribed. And this conclusion is strengthened by the observation, that in intestinal catarrh uncomplicated with nephritis the above-named brain-symptoms are not found.

Paul Schmidt, of Hamburg, investigates with care ('Journ. f. Kinderkr.,' 1870) *the laws of growth of children*, and the means of promoting and retarding it. Sœmmering drew attention to the fact that growth was not uniform in rate, but took place by starts, being at times slower, then quicker. The spinal cord appears to acquire its permanent growth about the seventh year; at least the vertebral column does not after that increase in width. The medulla oblongata, which at birth is 6‴ broad, is in the first year 9‴, and in the second year 12‴; about this time the olivary bodies and the pencillings of the rhomboidal space become more distinct. The cerebellum, according to Sœmmering's observations, weighs in the new-born three and a half drachms, in the seven year old over four ounces; the cerebrum weighs at birth ten ounces, at seven years thirty-one ounces. As then the proportion in new-born to the child seven years old of the cerebellum is 1 : 9, that of the brain is 1 : 3, so the first passes through its development to its permanent proportion more quickly. The cerebellum grows during this time more in breadth than length, whilst the cerebrum gains more in length. Referring to the researches of Burdach on the growth of the skull, he dwells upon the preponderant growth of the head in infancy; next, the chest exhibits the greatest growth; the limbs increase later. He then cites the researches of Litharzig as of special interest. He experimented on 300 individuals, and concluded that six long dimensions must be taken:—1. From the vertex to the chin. 2. From the chin to the upper margin of the sternum. 3. From the upper margin of the sternum to the point of the ensiform process. 4. From this apex to the upper border of the symphysis pubis. 5. The whole length of the thigh and leg. 6. From the upper edge of the inner malleolus to the edge of the sole. Litharzig concludes that when these six dimensions are given, and that you have also the length of the clavicle, you may construct the body in all its details, a matter of importance to sculptors. Growth lasts for twenty-five years, and comprises twenty-four epochs. The first comprises the first month, and every succeeding epoch embraces one month more than the preceding epoch. The total sum amounts to 300 months, and the twenty-four epochs Litharzig divides into three periods:—the first from birth to the end of the 21st month; the second from the 21st month to the 71st; the third from 71st to 300; and shows that, during the first, growth is very energetic, in the second slower than in the third. This agrees generally with Sœmmering, Sue, and Quetelet.

The author adds little on the causes which retard or promote growth; but states the following hygienic propositions:—1. Every inherited dyscrasia must be studiously counteracted, as rickets, scrofula, syphilis. 2. Advancing deformities must be treated early. 3. Advancing muscular hypertrophy may be treated by electricity and frictions. 4. Diet, air, &c., must be adapted to the case. 5. He insists

above all upon gymnastics, systematically carried out. To be useful, this means must be conducted in an orderly manner. No good is done by leaving children to tumble about according to their own instincts. 6. Watchfulness is required as puberty advances. He then discusses the question, what diseases are consequent upon growth, that is, to what evils does growth give rise? The influence of growth upon the apparatus of the circulation gives rise to many anomalies and diseases. He refers first to the sometimes incomplete change from the fœtal to the extra-uterine condition, as the more or less complete persistence of the foramen ovale and the ductus arteriosus. The development of the circulatory apparatus keeps pace with the wants of nutrition and development of particular parts. The skin and mucous membranes of children are more easily injected, and congestions of internal organs take place more easily, and this not only by venous stasis, but also through the activity of the arterial stream. Hence are observed in children such frequent congestions or bleedings of a non-inflammatory nature, which occasion very different symptoms according to the part affected. To this powerful and rapid development of the circulation the structure of the chest must be adapted; it must increase, especially in its antero-posterior diameter, to accommodate the larger lungs and heart. If the framework of the chest remain backward in this relation, serious disturbances ensue. The cribbed heart, hindered in its movements, butts powerfully against the chest-wall, and a tendency to palpitations and hypertrophy ensues; quick movements bring on dyspnœa. Can growth excite fever? Is there really "a growing fever?" Sœmmering agrees with Bouchut that there is a fever attending growth which cannot be localised. He observes that during the age of growth the plasticity of the blood is greater than at a later period; it often cups, is evidently apt to induce inflammatory affections; about puberty, when certain organs hitherto passive come into function, the blood undergoes a change which is not without danger; and the lively blood of childhood is very susceptible to the reception of zymotic poisons.

The influence of growth upon the digestive apparatus favours certain diseases. As a general proposition it may be stated that during growth, from the greater activity of the circulation and respiration, there is a much stronger disposition to diseases of the organs of respiration than after completed growth. The influences on the secretions is marked by the greater disposition to catarrh during childhood as in old age. In children the catarrh of the alimentary and respiratory mucous membranes, Regnier and the author say stand in relation to the rapidity of growth. But effusions are also more free in the serous membranes. During growth effusions into the pericardium, empyema and skin-dropsy are frequent. The greater activity of the lymphatic glands disposes to disease. Sometimes the Thymus-gland, instead of shrinking, remains large, and hinders respiration, and cases of persistent hypertrophy and degeneration of the supra-renal capsules (Addison's disease) are not uncommon in children.

Excessive growth of the lymphatic glands of the neck, bronchi and mesentery are frequent, and the enlargements only go down when growth is perfected. Growth disposes to many diseases of the brain and spinal

cord. Those children in whom growth is unusually rapid are more exposed to these diseases. It is observed that children seized with scarlatina whilst growing rapidly are more liable to brain complications. The history of chorea shows the influence of growth. Bouchut attributes the relation to the more active circulation of the period of growth inducing greater irritability of the spinal cord. Growth is not without pathogenetic influence in the skin and muscles. Eruptions and outgrowths are more common; and the muscles are more liable to hypertrophy, atrophy, spasmodic contractions, and the so-called essential paralyses. It is not maintained that growth produces these diseases, but that it constitutes a factor in these diseases of childhood which ought not to be disregarded.

Dr. O. Pollak ('Wien. Med. Presse,' 1870) examines the use of clysters in infants. From experiment on the dead body he finds that clysters can hardly penetrate beyond the ileo-cæcal valve; that from 60 to 120 grammes of fluid is enough to reach this boundary; if more is used it flows back from the anus. They are best applied with the child lying on its side. According to indications he uses water-clysters, camomile in flatulence; strengthening clysters concentrated to consistence of syrup, in intestinal catarrh and cholera infantum; astringent clysters, in follicular enteritis, of alum or nitrate of silver, and vinegar clysters consisting of half vinegar, half water, on account of its derivative virtue in hyperæmic conditions of the brain and its membranes. He also uses narcotic clysters, made by adding one drop of laudanum to the strengthening or astringent clysters. Pollak speaks highly of this therapeutical method.

Dr. Behrend contributes a memoir ('Journ. f. Kinderkr.,' 1870) on cretinism, idiocy, and their distinction, basing upon his own observations and the article on the subject, in the 'Nouveau Dictionnaire de Méd. et de Chir..' 1869, by M. Lunier. He discusses the question of hereditary transmission of cretinism. Lunier says the aphorism, "Goître is the father of cretinism," proceeds from those who do not distinguish cretinism from idiocy, and is based upon an erroneous interpretation of facts. Behrend says heredity plays but a secondary part in the genesis of cretinism, for—(1) Healthy parents who have lived in other localities, and there brought forth healthy children, have, after living some time in a place where cretinism is endemic, brought forth children more or less afflicted with the complaint; and, *vice versâ*, parents who, during residence in localities where cretinism is endemic, have produced cretins, have, on removing to healthy localities, produced healthy children. Ackermann has seen women who have removed from a cretinic district whilst pregnant bring forth cretins. (2) Although it has been disputed by Fabre, still it appears true, that children born in a country free from cretinism and brought into a cretinic district, if given to nurse there, have become cretins. (3) In cretinic districts it is not seldom the case that children born of healthy and intelligent parents, after living a longer time in a cretinic district, become affected with the disease, but escape if they remove to a non-cretinic district. (4) Half-cretins, or the goîtrous, who had cretinous children in a district affected with the disease, have had healthy children as soon as they have

removed from the district. (5) From time immemorial it is known that in the cantons Wallis, Bern, and others, children whose mothers, affected or not with a certain degree of cretinism, do not remain during the latter months of pregnancy in the valleys and gorges, but who go to the heights to bring forth, and remain there for three or four years, do not become cretins; whilst those children towards whom this conduct is not observed, do become cretins. (6) If we look to the idiots or insane, who spring from cretins or half-cretins, or, *vice versâ*, to the offspring of these last, so Behrend believes that this hereditary relation is never observed, except in the districts affected with cretinism. (7) In any case, it appears that unions between cretins or half-cretins and healthy persons from a healthy country, when the parties take up their residence in a cretinous country, bring forth as many cretins or half-cretins as do parents who were both cretins.

Pathological anatomy does not supply any great number of observations whereupon to found a distinction between idiocy and cretinism; and it is probable that some of the autopsies of so-called cretins were really of idiots. But observations made by Lunier and others show that in cretins the bones of the cranial vault are mostly thick and hard, seldom thinned in places, and without diploë; the basilar groove is almost always wanting; the basilar apophysis is shortened from behind forwards, and forms a right angle with the narrowed foramen magnum; the occipital fossæ are flatter than natural; all the foramina for the carotids and nerves are more or less narrowed, and it seems as if the basis of the skull were either compressed from below forwards by the vertebral column, or, rather, that it had suffered a compression from above downwards, and from either side of the occipital condyles, by which the upspringing parts of the inner surfaces of this basis was depressed, and consequently the depth of the occipital fossæ had undergone a shallowing process.

Although these abnormities only proceed from a want of resistance of the osseous texture, and have their origin in hydrocephalus, in atrophy, and in fatty degeneration of the osseous texture, also in rachitis, we cannot regard them as characteristic of cretinism. On the other hand, Virchow recognises as one of the forms of cretinism the too early bony union of the spheno-basilar suture; but there is every reason to suppose that this discovery of Virchow's is only an exception, and that, on the contrary, synostosis of the cranial sutures is rather retarded in cretins. The dura mater in most bodies was found thickened, resisting, and strongly adhering to the bones; the dilated sinuses overfilled with dark blood; the cavities of the arachnoid and of the brain contained almost always more or less fluid. The brain was, as a rule, smaller than the capacity of the skull, mostly compact, but sometimes infiltrated with serum, and even softened. The anterior central lobes were often unsymmetrical and only moderately developed; the depressions on the upper surface of the brain scarcely marked, the soft parts, as the corpora striata, the optic protuberance, and the peduncles were small and atrophied; and, on the other hand, the pituitary gland was often large. The cerebellum was scantily developed, flattened on its under surfaces, and generally firm. Its hemispheres were unlike; the lamellæ

were in smaller number; its peduncles atrophied; the bulb, the pyramids, the olivary bodies, are only slightly developed. The spinal cord is also badly developed, and its cavities are more or less filled with fluid. The arteries leading to the brain are narrowed, and as if compressed against the base of the skull.

Behrend differs from Lunier, and concludes that—1. Cretinism is not a specific disease. 2. Even where it is endemic, it is nothing more than idiocy combined with a high degree of scrofulosis and rhachitis.

REPORT

ON

MEDICAL JURISPRUDENCE.

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Poisoning.

Drs. A. Crum Brown and Thomas R. Fraser,* of Edinburgh, have extended their researches "On the Connection between Chemical Constitution and Physiological Action,"† and have investigated the physiological action of the ammonium bases derived from atropia and conia.

It is known that atropia has a somewhat complicated physiological action, for it directly influences the functions of the cerebro-spinal and sympathetic nervous systems. The principal effects produced by it on the former system are paralysis of the sensory and motor nerves, and excitation of the spinal cord. By its action on the sympathetic nerves it influences the contraction of the unstriped muscles. In addition to these general actions, atropia influences in a special manner the functions of the vagi nerves and of the iris, suspending the cardiac inhibitory power of the former and producing contraction of the latter. To cause death in the lower animals, it is necessary that atropia be administered in comparatively large doses. In the previous part of this research‡ they had found that the chemical addition of iodide or sulphate of methyl or of ethyl greatly diminishes the lethal activity of strychnia, brucia, thebaia, codeia, morphia, and nicotia. Very singularly, a similar operation performed on atropia, in place of diminishing, considerably increases the lethal activity of this alkaloid. The convulsant action of atropia was also removed, and the predominant symptoms produced by the salts of methyl-atropium are those of paralysis alone, and their mydriatic action is not markedly less than that of atropia itself. The paralytic action of the salts of methyl- and of ethyl-atropium was proved to be caused entirely by an a[illegible]

* 'Trans. Royal Soc. Edinb.,' xxv, p. 693.

† Vide 'Year-Book,' 1867-8, p. 441.

‡ Ibid., p. 443.

spinal motor nerves and on the cardiac inhibitory branches of the vagi. The paralysing action, though resembling that of atropia in character, differs greatly from it in degree.

Von Planta and Kekulé have shown* that conia, as obtained from *conium maculatum*, is a variable mixture of two bases, to which they give the names 'conia' and 'methyl-conia.' These bases resemble one another very closely in physical properties. Their composition is represented by the formulæ $C_8H_{15}N$ and $C_9H_{17}N$. The chemists above named investigated the action of iodide of ethyl upon conia, and proved that 'conia' (or, as it is called by Brown and Fraser, *normal conia*) is an imide base, and that 'methyl-conia' is a nitrile base. The elaborate experiments of Christison,† Schroff,‡ Von Praag,§ Kölliker,‖ and Guttmann,¶ have rendered important service to our knowledge of the effects and mode of action of conia. The authors had the great advantage of working with a sample of the original conia with which Christison had experimented in 1835, as well as with samples procured from three different manufacturers. It is known that conia is a poison of great activity, and that it produces marked paralytic and less obvious spasmodic symptoms. The former symptoms have been shown to depend principally upon an action on the peripheral terminations of the motor nerves, but the causation of the latter is as yet unknown. It has also been ascertained, chiefly by the investigations of Kölliker and Guttmann, that conia does not directly influence the functions of the sensory nerves, striped muscles, or heart. The experiments under notice confirm, in a general manner, the above results; but they also show that considerable differences occur both in the nature of the action and in the lethal activity of various samples of conia. Christison's conia, and a sample obtained from Mr. Morson, presented the most marked differences, and their action is alone described. The difference of activity between the hydrochlorate of Christison's conia and that of Morson was so great, that while two tenths of a grain of the former speedily caused death in a full-grown rabbit, this dose of the latter did not produce any distinct effect, one grain being the smallest fatal dose for a rabbit. The symptoms produced in mammals by the different samples were very similar in character. The more prominent of these were stiffness of the limbs, causing difficulty in moving about; spasmodic starts; distinct increase of reflex excitability; gradually increasing paralysis, with diminution and afterwards disappearance of the increased reflex excitability; and, finally, death by asphyxia. The exact causation of the paralytic symptoms differed, however, in a remarkable manner in different samples of conia. An extended series of experiments was undertaken to elucidate the causes of these striking differences. It was found that conia and methyl-conia produce very similar symptoms, the more prominent of which are spasms and paralysis. It

* 'Ann. d. Chem. u. Pharm.,' lxxxix, p. 129.

† 'Trans. Roy. Soc. Edinb.,' xiii, pp. 398, 415.

‡ 'Wchnbl. d. Gesellsch. d. Aerz. zu Wien,' 1856, and 'Lehrb. d. Pharmacol.,' 1869, p. 531.

§ 'Journ. f. Pharm.,' i, p. 44.

‖ 'Virchow's Arch.,' x, p. 238.

¶ 'Berlin Klin. Wchnschr.,' 1866, pp. 45, 55, 71, 81.

was next found that the paralysis produced depends on an action on the motor nerves and on the spinal cord. The rate at which each of these actions is produced by the various specimens of conia examined varied in a remarkable and, at first sight, perplexing manner. In the case of Christison's conia the former of these actions is the more powerful, while with Morson's and with methyl-conia the two are nearly equally prominent. Chemical examination of the two specimens proved that, while both contained methyl-conia, this base was much more abundant in Morson's than in Christison's conia. Physiological examination confirmed this result, for the action of the former specimen of conia more closely resembles that of methyl-conia than the latter. In other words, the conia containing the smallest proportion of methyl-conia acts most purely as a paralyser of motor nerves. Although the authors have not yet succeeded in obtaining a pure specimen of *normal* conia, it seems to them a legitimate deduction that conia altogether free from methyl-conia will be free from all spinal action, and will, accordingly, produce paralysis solely by influencing the motor nerves. The comparatively feeble potency of Morson's as compared with Christison's conia cannot be explained by its containing a large proportion of methyl-conia, for the activity of this substance is about the same as that of Christison's conia; it may be due to ammonia.

Experiments with the salts of dimethyl-conia showed that the lethal activity of this alkaloid is greatly less than that of either conia or methyl-conia, whilst the spasmodic symptoms which were among the effects of conia and of methyl-conia were entirely absent, the symptoms being those of paralysis only. There was no spinal-paralysing action, and the paralysis produced was proved to depend upon an action on the motor nerves, primarily restricted to their peripheral terminations.

Poisonous action of neurotics.—Dr. Lewisson,* of Berlin, contributes some valuable toxicological researches on frogs deprived of blood. These experiments were instituted for the purpose of determining how far neurotic poisons act directly on the nervous system, or, on the other hand, indirectly by a primary action on some of the chemical constituents of the blood and its corpuscles. It has been shown by Cohnheim, and is now well known, that a solution of common salt may be injected into the blood-vessels of the frog so as to wash out the blood nearly completely. If the process of injection be continued, with short intermissions, for an hour and a half, the result is that a fluid circulates essentially composed of salt water, with a very few red and rather more white corpuscles. In the animals thus treated the heart beats vigorously, and the power of voluntary motion is retained to a considerable extent. Now, if a neurotic poison, *e. g.* morphia or chloroform, administered to such frogs, act at all, it must be by a direct action on the nervous system, and not by changing any of the constituents of the blood. He concludes that all neurotics whose action on frogs is rapid have a direct influence on the nervous system. In other words, such neurotics as produce a speedy action in normal frogs were found to have a like influence on salted frogs. Such substances, however, as hydrogen, carbonic acid, and carbonic oxide, which may act on frogs for

* 'Archiv f. Anat. u. Physiol.,' 1870, p. 346.

hours without apparent result, possibly cause the effects which they ultimately produce by a simple poisoning of the blood. These experiments have a direct bearing upon the treatment of poisoning by the neurotics.

M. Toulmouche* contributes an interesting article on the *rôle* of the medical jurist in cases of poisoning. The paper is long and insusceptible of useful abstraction, being cast into the form of criticisms on actual cases of suspected poisoning; it will, however, well repay perusal. The chemical part of the question is not touched upon.

Arsenic.—Dr. Sonnenschein,† of Berlin, draws attention to the wide distribution of arsenic in nature, as a constituent of many minerals and soils, replacing phosphorus in phosphates and sulphur in sulphides; also to its extensive distribution by artificial means, such as the steeping of seed-corn to prevent the ravages of smut, and the wafting of acid fumes from chemical manufactories. Arsenic is also found in the refuse from these factories, as in soda refuse, the refuse from acids, &c. These facts must not be lost sight of in medico-legal practice.

The Rivers' Pollution Commissioners, in a blue book,‡ point out the abundant distribution of arsenic in the river-water of manufacturing districts, its origin being found in manufacturing refuse, soap, washing soda, &c. They add, "We are by no means disposed to take an alarmist view of this wide distribution of arsenic amongst the community; indeed, as we find it to be contained in very appreciable quantity in the rain which falls in London, being derived in this case from coal-smoke, it is doubtless present in the rain-water of all our large towns, and, consequently, cannot be entirely excluded from rivers; nevertheless, its unnecessary introduction [into rivers, Ed.] cannot but be regarded as, on many grounds, undesirable."

Roth§ publishes a paper, as a preliminary announcement of an extended series of researches, on the difference between the anatomical changes produced in cases of poisoning by arsenic and by phosphorus respectively. He states that whilst phosphorus produces in the stomach only ecchymoses and subsequent hæmorrhagic erosions as visible alterations, together with a sodden appearance of the mucous membrane and of the submucous tissue—appearances which must be regarded as the results of stagnation of the blood—and that whilst the same passive exudations of blood follow the subcutaneous injection of arsenious acid, the internal administration of arsenious acid, either in the solid state or in solution, and even of the metal arsenic itself, invariably produces a truly inflammatory condition, and that this exhibits itself by results varying from simple capillary hyperæmia to diphtheritic exudation with much sanguineous infiltration of the submucous tissues, followed by ulceration; these phenomena being exhibited chiefly in the fundus and greater curvature of the stomach. When arsenic or arsenious acid was given in the solid form these appearances were likewise met with in the duodenum. The author found that a concentrated solution of arsenious

* 'Ann. d'Hyg.,' xxii, p. 369.
† 'Horn's Vierteljahrsschr.,' xiii, p. 169.
‡ 'First Rep. of the Rivers' Pollution Commissioners,' p. 39.
§ 'Arch. f. Path. Anat.,' xlv, p. 499.

acid produced no visible effect when applied to the mucous membrane of the stomach after death.

Dr. C. E. E. Hofmann,* of Basle, relates three cases of arsenical poisoning, in two of which the symptoms closely resembled those of cholera, and in both these a fungus was found in the intestines, exactly resembling in appearance that figured by Klobs as a cholera-fungus. A similar observation had previously been made by Virchow.†

Barium.—A case of poisoning by nitrate of baryta is recorded,‡ but the symptoms are not detailed. This is a rare form of poisoning.

Phosphorus.—The memoirs relating to the toxicology of this substance are unusually numerous, long, and interesting.

Wolfs§ publishes the results of sixteen post-mortem examinations made during the period 1861—68, in Berlin, in which phosphorus had been administered. In twelve of the sixteen cases icterus was present, whilst in four its absence is noted. In ten of the bodies it was observed that the muscular tissue was dry, lustreless, and of a yellowish-red or yellowish-violet colour, in consequence of sanguineous extravasation and fatty degeneration. In five instances the brain, with its membranes, was anæmic; in two, the medullary substance was hyperæmic with venous blood; whilst in one case the medullary substance was extremely pale. The stomach was invariably of a grey or yellow colour. In four cases there was loss of the substance of this organ, whilst once there was minute hæmorrhagic erosion; but there were never cicatrices. The mucous membrane of the small intestines, as well as that of the stomach, was coloured in consequence of fatty degeneration of the epithelium, and glandular enteritis; this being especially marked in the duodenum, which was always free from loss of substance. The small intestines were, in one instance, deeply reddened and swollen throughout, especially in the ileum. The duodenum was once swollen, and once infiltrated with blood. In all the cases the liver had undergone fatty degeneration, and in five instances this organ was atrophied. The heart was always found to be fatty, shrunken, soft, and altered in colour. The contents of this organ, in ten cases where the character of the contents were noted, were mostly scanty, and almost entirely of a fluid consistency; in two cases there was a loose clot, whilst once the contents of the heart consisted of a mixture of loose clot and fluid blood. The kidneys had undergone fatty degeneration throughout, but more especially in the cortical substance. In three bodies the aorta had undergone fatty degeneration in patches. In one case a freshly deposited thrombus was found in the pulmonary artery, and an extravasation of blood in the neighbourhood of the vessel; whilst in another case there were numerous thrombi in the mediastinal vessels. In twelve intances the lungs were found to be completely inflated; twice they contained the normal quantity of blood; once they were partially hyperæmic; in two other instances they were anæmic; whilst in two cases they were completely, and in one case partially, œdematous. There was hæmor-

* 'Virchow's Archiv,' l, p. 455.
† Ibid., xlvii, p. 524.
‡ 'Pharm. Journ.,' x, p. 181.
§ 'Virchow and Hirsch's Jahresber.,' 1868, i, p. 311.

rhage into the substance of the lungs in four cases. In ten cases in which the state of the blood is noted, it was found to be fluid. Ecchymoses were never wanting. In thirteen cases they accompanied the whole course of the greater vessels; eight times they were met with in the pericardium; seven times in the mediastinum; five times in the pleura and in the subcutaneous adipose tissues; four times in the intermuscular connective tissue, in the pelvis of the kidney, and in the lung tissue; thrice in the endocardium, the commencement of the thoracic aorta, and in the mesentery; and twice in the subperitoneal adipose tissue.

A striking and interesting case of phosphorus poisoning is contributed by Concato.* The patient died eleven days after swallowing, with a suicidal intent, the ends of some matches tipped with phosphorus. Pain was speedily felt in the neck and œsophagus, gastric symptoms supervening at a later period. There was no elevation of the temperature of the body nor quickening of the pulse, till shortly before death, when the pulse rose to 146 beats per minute. A peculiar odour was observed in the breath, perspiration, and urine. The stools were constantly of a green colour, notwithstanding that there was considerable jaundice. On section, besides the appearances usually met with in such cases, destruction of mucous membrane of the œsophagus, of the anterior part of the pharynx, and of the epiglottis, was found, whilst that of the stomach and duodenum was intact. There was complete integrity and emptiness of the ductus chloledochus, of the gall-bladder, and of the bile passages; increase in size of Brunner's glands and of the mesenteric glands; and increase in the number of the white blood-corpuscles, and a diminution in the size and change in the form of the red corpuscles. These changes in the blood-corpuscles were likewise observed during the life of the patient. Crystals of hæmatoidine were found in the liver; fat-cells and crystals of margarine in the spleen, which was very pale. The temperature of the body was remarkable. Three quarters of an hour after death it was 104·9° F.; after four and a quarter hours, 97·7°; in seven and a half hours, 96·5°; and in eleven hours, 86°; in a room, the temperature of which was 54·5°. The substance which Piazza termed cholic acid was detected in the urine taken from the bladder after death.

Dr. Hoffmann,† of Berlin, gives a useful paper on the anatomical changes undergone by the mucous membrane of the stomach after poisoning by various substances, from which we extract the following on the changes that are found to have taken place after poisoning by phosphorus. (1) The direct local lesions which the gastric mucous membrane undergoes increase in intensity with the amount of oxidation which the phosphorus has undergone. With pure phosphorus they may be exceedingly slight or altogether absent, whilst when the phosphorus has been in its highest state of oxidation (phosphoric acid), the lesions approximate very closely to those produced by the commoner mineral acids. (2) For the production of changes in the glandular apparatus of the sto-

* 'Rivista Chir. di Bologna,' 1868, p. 257; 'Virchow and Hirsch's Jahresber.,' 1868, p. 311.

† 'Horn's Vierteljahrsschr.,' xii, p. 193.

mach it is indifferent whether the poison be introduced directly into the stomach or first reaches that organ after absorption. (3) These glandular changes are distinctly visible after the lapse of only three days, whilst their commencement may be detected nineteen hours after the ingestion of the poison into the stomach. (4) Fatty degeneration of the glandular structures is clearly visible after the lapse of eight days. (5) If the poison be introduced directly into the stomach, hyperæmia of the gastric mucous membrane may be produced, owing to the absorption of the phosphorus into the blood. This condition may be, perhaps, considered to be a state of congestive hyperæmia, and to be dependent upon glandular degeneration.

H. Köhler,* in reviewing memoirs by Schultzen, Riess, and L. Sorbets, thus sums up the differential points of diagnosis between poisoning by phosphorus and acute atrophy of the liver. In poisoning by phosphorus the symptoms are at first those of acute gastritis, and a marked interval ensues between the supervention of these and the appearance of icterus; but in acute atrophy of the liver this interval is wanting, and from the beginning there are, on the contrary, only gradually increasing signs of general malaise, slight gastric catarrh, and jaundice. In the former, the severe symptoms are developed more rapidly, and run their course more quickly than in the less rapid acute atrophy. Jaundice, much prostration, great general suffering, and excitation of the cardiac action are invariably set up two days before death from poisoning by phosphorus; whilst in acute atrophy of the liver scarcely more than gastric catarrh and slight jaundice can be detected. The cerebral symptoms are more marked in acute atrophy than in phosphorus poisoning. In the former they are never absent, and persist in a typical manner for one or two days before death, whilst they are not manifested at all in a large proportion of cases of phosphorus poisoning; nevertheless, they sometimes appear in such cases shortly before death, but in a less striking degree than in cases of acute atrophy. In phosphorus poisoning the liver is found to be enlarged, of a dull appearance, doughy, uniformly yellow, and with the acini well marked; whilst in acute atrophy that organ is diminished in size and collapsed, greasy on the surface, leathery, of a dirty yellow colour, and with traces only of the obliterated acini. In the former disease the hepatic cells are either filled with oil globules, or entirely replaced by these; in the latter disease the cells are, on the contrary, filled with a fine granular detritus, and their structure is replaced by newly-formed connective tissue. Too much stress is usually placed on the abundance of fat in the hepatic cells, especially in animals that have been poisoned by phosphorus, and on the appearance of bile pigment in the blood. In phosphorismus, accumulations of bile are caused more especially by compression of the walls of the ducts by the hepatic cells; but in acute atrophy through exudation into the periphery of the lobules, and the formation of new connective tissue. These accumulations of bile are of no diagnostic value. In those cases where no stagnation is apparent, the jaundice must be explained by supposing changes to have taken place in the blood. Seeing that small quantities of the biliary constituents pass

* 'Schmidt's Jahrb.,' 147, p. 148.

normally from the liver and intestines into this fluid, and are there oxidized, this passage must take place in a greater degree in diseases in which the processes of oxidation are in abeyance, as they are here; and there must necessarily be an accumulation of these biliary constituents in the tissues, and elimination through the urine. If, simultaneously, stagnation of the bile occurs in the liver, the quantity of bile-pigment circulating in the blood must vastly exceed the oxidising capacity of the organism. He further states that in two cases of phosphorismus not a trace of sugar could be detected in the liver; that the urine in such cases is rich in peptones and other nitrogenous extractives, and, as was first pointed out by Schultzen, in sarcolactic acid, whilst only traces of leucine and tyrosine can be detected. In the urine of acute atrophy leucine and tyrosine are present in such quantity that the addition of acetic acid alone suffices for their detection, and a peculiar substance, oxymandelic acid ($C_8H_8O_4$), which is characteristic of acute atrophy, is present, and appears to replace the sarcolactic acid met with in phosphorismus.

Antidotes for phosphorus.—Dr. Edward Lichtenstein,* of Berlin, states that he has administered oil of turpentine successfully in doses of twelve drops, well diluted, in cases of poisoning by phosphorus. Köhler† has made similar observations.

Prof. Bellini‡ contributes a long and valuable paper on phosphorus, having reference more especially to the antidotes to be employed. He thinks that the nitrate and the chloride of silver promise the best results. He states that phosphorus in the presence of nitric acid and of oxide of silver produces an insoluble compound of silver and phosphorus, which is unaffected by weak acids, or by the acids of the stomach. He calculates that three grains of nitrate of silver are required for the neutralisation of one grain of phosphorus. Hence for an adult who has taken a poisonous dose of phosphorus (say three quarters of a grain), one grain of the nitrate would be requisite, a quantity of silver salt that may be taken with impunity. It is obvious, however, that the decomposing effect which the chlorides of the gastric fluid exert upon soluble silver salts must be taken into consideration in apportioning the dose of the antidote.

Prussic acid.—Preyer,§ in an elaborate memoir on the physiological action of hydrocyanic acid, confirms Bezold's and Blöbaum's observation that atropine is a direct antidote for the acid. Rabbits, to which 1-60th grain, or more, of sulphate of atropine had been administered subcutaneously, and then a fatal dose of prussic acid, always survived. The acid likewise never proved fatal when the antidote was injected before the supervention of asphyxia.

M. Roussin‖ furnishes an able and instructive report on the examination of the viscera of Jean Kinck, in the celebrated Troppman affair. No hydrocyanic acid was obtained by distillation of the viscera. The

* 'Berlin Klin. Wchnschr.,' vii, 1870, p. 33.
† Ibid., vii, 1870, p. 1.
‡ Quoted in 'Br. and For. Med.-Chir. Rev.,' 1870, p. 25.
§ 'Virchow and Hirsch's Jahresber.,' 1868, i, p. 337.
‖ 'Ann. d'Hyg.,' xxx, p. 166.

gastric mucous membrane was studded with small, blue, rounded masses, which were unaffected by dilute acids, but the colour of which was discharged by alkalies and by solution of ammonia. These were found to consist of Prussian blue. A quantity of sulphate of potassium and of sulphide of iron was also detected in the stomach. M. Roussin concludes that Troppman had made the poison by the well-known process of distilling ferrocyanide of potassium with dilute sulphuric acid, and that owing to the want of care with which the operation had been conducted, the products ordinarily left behind in the retort had been carried over into the receiver. This would certainly account for the peculiar substances met with in the stomach of Jean Kinck, for the products ordinarily left behind in the retort during the distillation of prussic acid in the manner described are a white ferrocyanide of iron and potassium, and protosulphate of iron. The former salt, according to M. Roussin, had been slowly converted by oxygen into a form of Prussian blue, whilst the latter had become changed into sulphide of iron by the sulphuretted hydrogen evolved during putrefaction. He was hence enabled to report that the deceased probably died from the effects of prussic acid, although none of the poison was detected in the stomach.

Aconite.—Dr. Flückiger* adds to our knowledge of the active principles of this drug. His paper treats of the alkaloids contained in several plants belonging to the genus *aconitum*. The author distinguishes between aconitine, pseudaconitine, napelline, and lycoctonine. The first of these alkaloids is the most important, and possesses among others the following properties:—It becomes soft and pasty in boiling water, and imparts a violet colour to phosphoric acid, when evaporated along with that substance to a syrupy consistence on a water-bath, and this persists even for days after the cooling of the mass. The aqueous solution of aconitine has a bitter, but not acrid, taste; the solution is not precipitated by platinic chloride, but the solution of the double salt of mercuric and potassic iodides produces in such solutions a copious non-crystalline precipitate. Aconitine is very soluble in ether, chloroform, and alcohol; it is anhydrous, and its nitrate crystallizes readily. Pseudaconitine does not become pasty in hot water, and does not exhibit the reaction with phosphoric acid described above. It is soluble in water, ether, alcohol, and chloroform, with great difficulty, and crystallizes more readily (in large prismatic crystals) than aconitine.

Atropine.—Dr. Thomas R. Fraser,† of Edinburgh, gives an investigation into some previously undescribed tetanic symptoms produced by atropine in cold-blooded animals, with a comparison of the action of atropine on cold-blooded animals and on mammals. The principal results that were obtained are thus summarised:—1. Atropia produces in frogs well-marked convulsive and tetanic symptoms, which, when present in an extreme degree, form a separate stage in the poisoning, succeeding that of paralysis. 2. Tetanic symptoms follow the subcutaneous administration of a dose of sulphate of atropia equivalent the 1-100th of the weight of the frog, and of doses a little greater

* 'Pharm. Ztschr. f. Russ.,' 1870, No. 9; 'Chem. News,' xxii, p. 216.

† 'Trans. Roy. Soc., Edinb.,' xxv, p. 449.

less than this. 3. These symptoms are due to a direct action of atropia on the *medulla* (*oblongata* and *spinalis*). 4. The differences between the paralytic and convulsive symptoms that occur in frogs and those that occur in mammals may be explained by the greater susceptibility of the former to the action of a paralysing agent, and by the amount of paralysing action being greater in the case of atropia than the amount of convulsant action. 5. The different symptoms that are produced by different doses of atropia in mammals of the same species may be explained by its paralysing being greater than its convulsant action. 6. The paralysing and convulsant actions of atropia can be imitated in both frogs and mammals by the combination of a paralysing with a convulsant substance. These experiments throw a new light on the causation of some of the symptoms of atropia, and also of many other substances whose action like that of atropia produces a combination of paralytic and convulsive symptoms; and they form a valuable contribution to scientific toxicology.

Camphor.—A case of poisoning by this substance is related,* in which seventy-six grains were given to a child suffering from a mild attack of enteric fever. The symptoms were, lividity of the countenance, efforts at vomiting, cold perspirations, convulsions, immobility, stupor, and retention of urine. These last for six hours, and then recovery took place. Coffee was administered as an antidote.

Conia.—Herrn Verigo† draws the following conclusions from his experiments upon conia:—1. Conia acts chiefly and most energetically upon the spinal cord, in which it affects by preference the motor filaments. 2. This action manifests itself in frogs by paralysis without a trace of convulsions, independently of the dose of the poison; in mammals, on the contrary, with large and fatal doses, strong convulsions are almost constantly set up, whilst with small and non-fatal doses there is only paralysis of the extremities. 3. The paralysis extends from the spinal marrow to the peripheral system of motor nerves, which then become affected for the first time. 4. According to all appearances the brain is but little affected. 5. The sensory nerves are but little affected by it. 6. In small doses, conia diminishes the rapidity of the respiration; in large doses it may entirely paralyse this. This arises, not, as Kölliker supposes, from an affection of the peripheral nerves, but from paralysis of the cord. 7. The convulsions induced in mammals by conia are apparently a certain sign of the fatal termination of the poisoning. They form a distinct feature in the poisoning, and are independent of paralysis of respiration. 8. The blood undergoes no apparent changes; at all events, the corpuscles do not lose their property of absorbing oxygen. 9. Conia exerts no direct action on the heart and pulse. 10. The temperature of the body falls in proportion to the severity of the paretic symptoms. The action on the pupil is variable. 11. Conia acts more powerfully and more speedily when injected into a vein than when it is taken internally or injected beneath the skin. After these two latter modes of injection the action is precisely alike. 12. Conia has no action in the quality or quantity of the

* 'Bull. de Ther.,' lxxvi, p. 379.

† 'Deut. Zeitschr. f. Staatsarznk,' xxviii, p. 213.

urine. 13. Applied externally it excites slight itching and redness only. 14. On section, mammals poisoned by conia exhibit no invariable appearances.

Veratria.—Dr. Pégaitaz* has experimented on dogs and cats with this alkaloid, which was administered by subcutaneous injection in the form of a solution of the tartrate, and finds: 1. That at first excitement is produced, then depression. 2. Next, salivation, nausea, vomiting, and generally also purging. 3. Uncertainty in the movements, firstly of the hinder, secondly of the fore limbs; and then rigidity of the limbs. 4. Increase in the reflex excitability and diminution of sensibility. 5. Gradual diminution in the temperature, and of the frequency of the pulse and respiration. 6. Convulsions and tetanus. 7. No signs of inflammation on post-mortem examination.

The results differ in many important respects from the experiments of Oulmont.†

Coal-tar colours.—Drs. Hermann, Eulenberg, and Hermann Vohl‡ jointly contribute a valuable memoir on the noxious and toxic influences of the colours prepared from coal-tar. Seeing that the greatest discrepancies have existed in the results of different observers as to the poisonous nature or inocuity of these colours, the authors deemed it necessary to investigate the following questions in the case of each separate colour: Has the dye been made from substances which are of themselves hurtful or poisonous? In the purification of the dye has a certain portion of the hurtful ingredients, if any, been left behind through defect of manipulation? Does the chemically pure material of itself act prejudicially upon the animal body? Does the use of the dye demand mordants containing substances prejudicial to health, and do these remain behind in the fabric? They conclude with regard to the aniline colours that they are never poisonous *per se*, but that their toxic qualities, when they have such, are due to the impurities (aniline and arsenic) left behind in the manufacture of the pigments.

Coralline.—Considerable attention having been drawn to this dye, used for imparting a brilliant and fashionable colour to socks, as the cause of a peculiar eruption on the skin, it has received a searching investigation at the hands of MM. Tardieu and Roussin.§ They find that coralline is a more active poison when injected into the cellular tissue than when taken into the stomach, though in both cases it produces fatal results in the higher and lower animals. Its effects are those of a drastic—pain, vomiting, diarrhœa, fever; and after death fatty degeneration of the liver and other organs, as is observed in phosphorus and arsenical poisoning. Locally, an eruption is produced very similar to that caused by croton oil. In the human subject the local effects from the use of articles of dress, such as stockings, socks, and flannel shirts, dyed with coralline, are chiefly observed, though in severe cases the constitutional effects have been occasionally noticed. Fortunately, coralline, which is made from carbolic acid, is readily

* 'Deut. Archiv. f. Klin. Med.,' vi, p. 156.
† 'Bull. Gén. de Ther.,' lxxiv, p. 145; 'Year-Book,' 1867-8, p. 478.
‡ 'Horn's Vierteljahrsschr,' xii, p. 300.
§ 'Ann. d'Hyg.,' xxxi, p. 257.

recognised by a few simple tests. The chief red dyes in use are—1. Madder, a mordant of alumina, or of tin and alumina, being used. This dye is unaffected by dilute hydrochloric acid and by ammonia. 2. Cochineal, mordanted with tin. It is turned of a violet colour by a solution of ammonia, and communicates a colour to the solution. 3. Murexide, a mordant of mercury or of lead being employed. It is rapidly bleached even by citric acid. 4. Safflower, which is completely decolourised by a short ebullition with a dilute solution of soap. 5. Aniline red or magenta. This, when prepared by Medlock's process, generally contains arsenic. The colour is rapidly destroyed by contact with ammonia, but is restored by the addition of an acid, or even by simply allowing the ammonia to evaporate. The arsenic, if present, may be detected by Marsh's process. 6. Coralline, which is but slightly affected by boiling water, and not at all by cold water, but is readily extracted by boiling alcohol. Coralline is unaffected, or merely rendered of a brighter colour by alkalies, and it is precipitated by acids. Considerable doubt has, however, been thrown on these researches, and some observers think that coralline, when pure, is inocuous.

Laburnum.—Some interesting cases of poisoning by this tree, observed by Hair, are communicated by Dr. B. W. Richardson.*

Husemant has recently examined *cytisine*, the active principle of the laburnum. He finds that it exists in all parts of the tree, except the wood. Cytisine is a crystallisable alkaloid, and has the formula $C_{20}H_{27}N_3O$. A dose of from four and a half to eight grains will, when subcutaneously applied, kill a large dog within thirty minutes.

Cocculus indicus.—W. Gauss‡ describes the botanical and pharmacognostic characters of this substance, the use made of the berries, and their physiological action. After quoting the older analyses of Pelletier, Couërbe, and others, he treats at length on the constituents of the berries, viz.: *Menispermine* $C_{18}H_{12}NO_2$, a solid crystalline body, which bears some resemblance to mercuric cyanide. It is a tasteless substance, insoluble in water, but soluble in alcohol and ether, and fuses at 120°; it is not, so far as experiments go, a substance which exerts any marked action upon animals. *Paraspermine* crystallises, fuses at 250°, and may be sublimed in sealed tubes. It is also insoluble in water, but is readily dissolved by ether and by absolute alcohol. *Menispermic acid*, an, as yet, ill-defined body which, according to Boullay, exists in *cocculus indicus*, but which neither M. Pelletier nor yet M. Casaseca has found in that seed. *Picrotoxine*, discovered in 1812 by Boullay. The formula of this substance is, according to Mill, Pelletier, and Couërbe, $C_{12}H_7O_6$, while M. Oppermann assigns to it the formula $C_{12}H_6O_4$. The preparation of this substance from the berries is described by the author at great length; it may be briefly stated to consist in exhausting the previously pulverised berries with boiling alcohol, removal of the latter by distillation, taking up the residue with boiling water, addition of a solution of acetate of lead to the aqueous extract, removal of the excess

* 'Brit. and For. Med.-Chir. Rev.,' xliv, p. 543.
† 'Beilstein's Zeitschr. f. Chem.,' 1869, 22.
‡ Ibid., 1870, 15, 16; 'Chem. News,' xxiii, p. 46.

of lead from the filtrate by means of sulphuretted hydrogen gas, and recrystallisation of the picrotoxine from the aqueous solution. The chemical reactions of picrotoxine are next described, and also the results of physiological experiments.

Strychnine.—A remarkable case of poisoning by this alkaloid is published by MM. Tardieu and Roussin,* in which the patient appears to have survived a dose of at least fifteen grains of the poison for a period of eighteen hours. A kept mistress, whose age is not stated, came home at 1 a.m. drunk. Her companions stated that, ten minutes later, she was seized with convulsions. She uttered cries, and vomited small quantities of an apparently alcoholic fluid. There appeared to be much pain in the epigastrium, and the efforts to vomit were repeated. At 8 a.m. she appeared to be better, and she was then dressed. At 10 a.m. severe tremors supervened; the face was livid, and the pupils dilated. She passes some urine under her. The convulsive movements continued, especially on touching her. At 11 a.m. she complained of pains in the legs; the application of the hand to the abdomen caused the countenance to change colour, and brought on rigors. At 7 p.m. prostration succeeded to excitement, and she was delirious. She still, however, possessed sufficient lucidity to state that a certain person had given her a white powder in a glass of wine. She was placed in a cab and taken to the hospital, but on her arrival life was found to be extinct. At the section, eleven grains of strychnine were scraped off the mucous membrane of the alimentary canal. The poison was seen adhering to the glandular structures in small, white, shining dots. About three grains more of strychnine were extracted from the viscera.

M. Tardieu justly remarks that this is an extraordinary case. The fatal dose was largely in excess of that ordinarily required to produce death, and much of the alkaloid had escaped absorption. Again, although the exact period of administration could not be determined, the girl undoubtedly survived the first explosion of the symptoms sixteen hours, a period which could scarcely have been expected, seeing how much of the poison still remained in the stomach unabsorbed. The authors refer to cases which they have previously related, in one of which the patient survived seven hours; in another, an infant survived the supervention of the symptoms of poisoning four hours.

M. Paul Bert† draws attention to the antagonism between the action of this alkaloid and that of carbolic acid. To a dog, in which both vagi nerves had been divided, a poisonous dose of carbolic acid was administered. A grain of sulphate of strychnia (*i. e.* a sixfold fatal dose) was subsequently administered by subcutaneous injection. Death resulted in three quarters of an hour, without any of the usual symptoms of strychnine poisoning being observed. In order to determine whether this immunity was due to a direct action of the acid upon the alkaloid, or whether it was the result of exhaustion of the sensory cells of the cord in consequence of carbolic-acid poisoning preventing the manifestation of the symptoms of strychnine poisoning, the following experiment was performed:—A fatal dose of carbolic acid was given to a dog,

* 'Ann. d'Hyg.,' xxxiv, p. 128.

† 'Gaz. de Paris,' 1870, 11, p. 145; 'Schmidt's Jahrb.,' 147, p. 270.

and five minutes after convulsions had been induced, and before there could have been exhaustion of the cord, two thirds of a grain of sulphate of strychnia was injected beneath the skin. In two minutes the symptoms of strychnine poisoning were developed, and proved fatal in five minutes. This experiment shows that the immunity from the effects of the alkaloid conferred by carbolic acid proceeds from the latter of the two admissible causes.

Carbolic acid.—Numerous cases of poisoning by this disinfectant have been published in the medical journals. They present, however, no new features of much interest.

Cynoglossine.—Dr. Buchheim * assigns this name to a new alkaloid, extracted from plants belonging to the natural order *Borragineæ*. He says that, having found it stated that the extract of cynoglossum acts as a poison, in a manner similar to curara, he obtained from the cynoglossum plant a body which, although not quite pure, exhibited properties which—as, for instance, alkaline reaction, precipitability by tannin, by phospho-molybdic acid, and by mercuric chloride—proved it to be akin to an organic alkaloid. This substance was found to exert a specific action on various animals.

Physostigma.—Dr. Thomas R. Fraser† proposes atropia as an antidote for physostigma. After instancing the numerous apparently well-authenticated examples that have already been recorded on the antagonism between various of the physiological actions of different active substances or remedies, as between the actions of morphia and atropia, and of physostigma and atropia on the iris and on the minute blood-vessels; of morphia and quina on the minute blood-vessels; and of physostigma and atropia, hydrocyanic acid and atropia, and muscarina (the active principle of *Agaricus muscarius*) on the vagi nerves; he proceeds to consider the antagonism between the lethal actions of active substances, and remarks that he cannot instance any certainly established example of physiological antagonism in this latter comprehensive form. He then demonstrates that, in certain animals (rabbits and dogs) at least, the lethal action of physostigma may be prevented in a remarkable and perfect manner by the physiological action of atropia. The minimum fatal dose of extract of physostigma was ascertained by experiment for each kind of animal; this dose, or one considerably greater, was administered *after*, *along with*, or *previous to*, a certain dose of sulphate of atropia, and if death did not result, the same animal was killed, some days subsequently, by a dose of the extract of physostigma, equal to or less than that given in the combination. Two series of experiments—in one series sulphate of atropia having been administered *before* a lethal dose of extract of physostigma, in the other the two substances having been injected *simultaneously* or nearly so—showed, in the most rigid manner, that atropia, by its action on the living economy, counteracts or prevents the lethal action of physostigma. The next step in this inquiry, and that by which the practical value of the above results can be most thoroughly tested, was to administer the antidote *after* a fatal dose of the poison. These experiments showed

* 'Neu Jahrb. f. Pharm.,' Sept., 1870.

† 'The Practitioner,' ii, p. 65.

that the lethal effects of doses of physostigma greatly in excess of the minimum fatal dose may be prevented by doses of atropia much below the minimum fatal; and they likewise contained a demonstration of the power of atropia to prevent the lethal effects of certain doses of physostigma. In answer to the possible objection that such a demonstration, being made in the lower animals, does not admit of application to man, Dr. Fraser replies that the actions of physostigma and atropia are precisely the same in man, and dogs, and rabbits A marked difference undoubtedly exists between the susceptibility of man and of these animals to the action of atropia, but this difference, being merely one of susceptibility, requires only that the quantity administered to man should be less than that to either dogs or rabbits, in order that equal effects should be produced. It is, besides, in our power to greatly intensify the action of atropia, by modifying the method of its exhibition. If a minute dose be directly introduced into one of the superficial veins of a rabbit, poisonous effects are very speedily produced, and thus the seeming difference in its action on man and rabbits is at once removed.

In treating cases of poisoning in man, the author recommends that the sulphate of atropia should be given by subcutaneous injection, in doses from 1-50th to 1-30th of a grain. The exhibition of the antidote should be persevered with, in repeated doses, until the pupils are fully dilated and the pulse-rate increased, and probably, also, until the hypersecretion of bronchial mucus, which greatly impedes respiration, is completely checked.

Morphia.—Dr. Wilson,* of Philadelphia, relates a case of morphia-poisoning, which was apparently successfully treated by the hypodermic injection of a quarter of a grain of atropine, dissolved in water. The patient speedily lost her stertorous breathing, and in eight hours recovered consciousness. This result is contrary to the experience of Brown-Séquard and other observers, which tends to show that death by opium takes place from the same dose, whether belladonna be employed as an antidote or not.

Dr. L. Pollak† contributes the notes of a case of poisoning by five and a half grains of atropine. Morphia (it is not stated in what quantity) was administered by hypodermic injection, without delaying the fatal result. No antagonism of the action of the morphia to the atropia could be detected. The case is, however, incomplete; for, although the quantity of morphia used is not stated, there is little doubt that too little was given to produce the supposed antidotal effect.

Insusceptibility of pigeons to the toxic action of opium.—Dr. Weir Mitchell announces that he has ascertained that pigeons are not susceptible to the usual soporific action of opium,‡ and, moreover, that it is difficult, perhaps impossible, to cause their death by this drug or by morphia. Dr. B. W. Richardson and Dr. Sedgwick§ confirm Dr. Mitchell's observations.

* 'Med. and Surg. Reporter;' quoted in 'Lancet,' 1869, i, 473.
† 'Wien. Med. Pres.,' xi, 28, 1870.
‡ 'Amer. Journ. of Med. Sc.,' lvii, p. 37.
§ 'Brit. and For. Med.-Chir. Rev.,' xliii, p. 539.

Dr. Mitchell* has since made further observations, and concludes in regard to the influence of the opium alkaloids on birds as follows:—1. Birds, namely, ducks, chickens, and pigeons, are never poisoned by crude opium, its aqueous extract, or acetum opii (black drop), given internally; while the salts of morphia must be given in enormous doses to produce fatal effects when administered in the same manner. 2. Morphia salts, used hypodermically in excessive amounts, never cause sleep or stupor, but act as excitants (convulsants) upon the motor centres. In some instances the spasms are tetanoid in character; but in the duck they approach nearest to the typical strychnine spasm. 3 Thebaia is a tetanising agent, only inferior in energy to strychnia and brucia. Narcotine, almost inert in man, destroys birds when employed hypodermically, in doses of from two to seven grains. Codeia is a fatal convulsing agent in birds (pigeons). Meconine causes emesis when given internally, and is harmless if placed under the skin. Narceia has no perceptible influence except to disturb slightly the respiratory function. Cryptopia, in doses of one fifth to one half grain, has no effect. None of these agents cause sleep in the pigeon, duck, or chicken. The inaction of opium is due, he believes, to two causes: first, to the very great slowness with which it as well as morphia is absorbed. The remaining amount of protection necessary to constitute an insurance against fatal results must be due to the great difficulty with which pigeons, especially old birds, are poisoned by opiates. Probably elimination is sufficiently rapid to protect the system against a dangerous accumulation of the drug. Pigeons, and probably other birds, seem to possess the same peculiarity which causes certain men to exhibit, under opiates, only excitement of the motor ganglia, emesis, and a restlessness, which, with fuller doses, might possibly eventuate in convulsions—a rare incident of opium poisoning, which, however, occurred early in a case which the author has elsewhere reported.

Gelseminum sempervirens.—Dr. J. T. Main† describes how, in 1866, he took through mistake one drachm of fluid extract of this plant, which is much used in America as a therapeutical agent. In a short time he became nearly blind, control over the upper eyelid was almost entirely lost, the flexor muscles of the hands and arms were paralysed, whilst the extensors were nearly so. Sensation in the hands and arms was blunted, but not in proportion to the loss of motion. The speech was somewhat affected, and a disagreeable sensation was felt in the head even before the muscles came under the influence of the drug; but the mind was quite clear. In this state he requested the poles of a galvanic battery to be applied to his hands, which was done. He was instantly relieved; and not only was the relief instantaneous, but it was perfect and permanent. Dr. Main has since tried the same remedy on persons pretty well under the influence of gelseminum, and with equally satisfactory results.

The name *gelseminine* has been assigned by Dr. Wormley‡ to a new alkaloid extracted from the above plant. Gelseminine is, in a pure state, colourless, odourless, solid, having an intensely bitter taste. It

* 'Amer. Journ. of Med. Sc.,' lviii, p. 17.
† Ibid., p. 292. ‡ Ibid., lix, p. 581.

has powerful basic properties, completely neutralising all acids. It is sparingly soluble in water, freely soluble in ether and in chloroform. The alkaloid is characterised by its property of yielding with concentrated sulphuric acid a brown colour, which, on the application of heat, changes to a beautiful purple. This reaction may be obtained with 1-100th grain of gelseminine or of one of its colourless salts. The addition of bichromate of potash to this acid solution produces no marked change. Gelseminine is an exceedingly poisonous substance. The paper contains an account of a toxicological search for the alkaloid in a case of poisoning by the liquid extract of the plant.

Picrotoxine.—This non-nitrogenous neutral principle has recently received an investigation at the hands of M. Roeber.* He finds that it is a powerful excitor of the medulla oblongata, or, perhaps, of all the nerve centres situated in the medulla oblongata. Its administration causes violent and long-continued convulsions of the body generally, prolongation and ultimately stoppage of the cardiac beats, and acceleration of respiration, which is finally arrested by cramp of the glottis and diaphragm.

Poisonous fungi.—An anonymous reviewer† draws attention to what appears to be an extremely valuable book by Dr. Valenti-Serini on the poisonous fungi of the territory of Siena. We have not been able to gain access to the original work, but from the description given, and from the fact that nearly all, if not all, the dangerous fungi described grow in the British Islands, the volume must be a very useful and instructive one to the medical practitioner.

Nicotine.—L. Schotten‡ has observed the following accordant symptoms in two cases of chronic poisoning by nicotine:—(1) A high degree of mental irritability. (2) Sluggishness and weakness of the voluntary muscles, which so affected one patient that it was with great reluctance that she took her meals. With this was associated a feeling of dizziness. (3) Slowness of respiration, the inspirations falling to eight per minute, and being occasionally sighing. (4) Painful neuralgia (*a*) of the external pudendal nerve, depriving the patients of rest; erections; strangury every morning, extending from 4 a.m. till noon; (*b*) of the cœliac plexus with persistent sour eructations; (*c*) of the fifth intercostal nerve on the left side; and (*d*) of the right brachial plexus. (5) Hyperæsthesia of the olfactory nerve (to tobacco and eau de Cologne), and of the acoustic nerve to loud speech.

Bread.—Drs. H. Eulenberg and H. Vohl§ give a good *résumé* of the known facts relative to the adulterations of bread with alum, blue vitriol, and white vitriol, and the effects on the human organism of the use of such bread.

M'boundou, or icaja.—The Gaboon poison has received an investigation at the hands of MM. Rabuteau and Peyre.‖ These gentlemen have experimented with this substance, which is said to be prepared

* 'Lancet,' 1869, i, p. 616.
† 'Brit. and For. Med.-Chir. Rev.,' xliii, p. 41.
‡ 'Virchow's Archiv,' xiv, p. 172; 'Schmidt's Jahrb.,' 143, p. 18.
§ 'Horn's Vierteljahrsschr.,' xii, p. 322.
‖ 'Neu. Rep. f. Pharm.,' xix, p. 631.

from the root of an unknown plant. They find that the poison contains one or more alkaloids, since the aqueous decoction is largely precipitated by iodide of potassium, and also by phospho-molybdic acid. The toxic effects of m'boundou bear some similarity to those of brucia, but the authors state that, under certain conditions, this poison does not hurt men.

Tutu.—This formidable poison, the seed of the *coriaria ruscifolia*, has recently been examined by Mr. W. Skey.* He finds that its toxic qualities are due to the presence of a non-volatile oil, and not, as was formerly supposed, to an alkaloid. He adds that these results possess an interest beyond that immediately under notice, since it will offer another instance (castor oil is one) in which a non-nitrogenous oily principle is proved to affect the system like a neurotic poison, this class of poisons being almost always composed of alkaloids, or, at least, of nitrogenous substances.

Agonia bark.—Dr. P. Peckolt† has examined this bark, that of the *plumeria lancifolia* tree, indigenous to the Brazils, which is largely used as a febrifuge in that country, and has extracted from it a crystalline, odourless, bitter substance, $C_{10}H_{14}O_6$. It appears to be a glucoside, identical with arbutine, and to be poisonous.

Croton oil.—Geuther and Fröhlich‡ have reinvestigated this oil, and especially the volatile oils contained therein. The details are chiefly, however, of chemical interest.

Thebain.—Frof. Falk,§ of Marburg, has investigated the toxicological action of this opium principle and concludes—1. That the hydrochlorate of thebain belongs to the more active poisons, and is quickly absorbed into the cellular tissues. Employed in sufficient quantity hypodermically, it kills dogs, cats, guinea-pigs, and many other animals, in a short time. 2. In small quantities thebain is no longer fatal. 3. Injected directly into the blood, the hydrochlorate is more active than when employed subcutaneously. 4. Dogs and cats withstand the action of thebain less readily than guinea-pigs. The author describes three stages of the poisoning;—first one stage of restlessness and anxiety, passing into one of convulsions, and finally ending in paralysis.

The following notes refer to the detection of various poisons.

Chloroform.—For the detection of chloroform in the blood and in other liquids Hager‖ recommends the addition of dilute alcohol, with neutralization of the free acids and subsequent distillation. The distillate must then be acted upon with nascent hydrogen, by which means chloroform yields hydrochloric acid, and this may be easily detected by the usual tests.

Prof. A. W. Hofmann¶ has discovered a most delicate test for chloroform, based upon the fact that, when chloroform is mixed with

* 'Chem. News,' xxii, p. 314.
† 'Beilstein's Zeitschr. f. Chem.,' No. 12, 1870.
‡ Ibid., No. 18, 1870.
§ 'Deut. Klin.,' 1869, p. 362, &c.; 1870, p. 18, &c.
‖ 'Virchow and Hirsch's Jahresber.,' 1868, i, p. 331.
¶ 'Neu. Rep. f. Pharm.,' xix, p. 689.

aniline and an alcoholic solution of caustic soda, a powerful reaction takes place, especially on gently warming, and isonitrile is formed, which is readily recognised by its peculiarly characteristic odour. This reaction is so delicate that when one part of chloroform is mixed with from five to six thousand parts of alcohol the drug is readily detected.

Hydrocyanic acid.—Mr. Welborn* points out the fallacies connected with the use of Schönbein's test for prussic acid. The latter observer had shown† that paper imbued with tincture of guaiacum, and then just before use touched with a solution of sulphate of copper, immediately assumes a blue colour when exposed to the most minute trace of the vapour of prussic acid, and he proposed this reaction as a delicate test for the poison. Mr. Welborn shows that chlorine gas and the vapours of nitric acid both impart a similar blue colour to the prepared paper.

Conia.—Zalewski‡ adds to our knowledge regarding the means to be employed for detecting this alkaloid. His experiments were made under Dragendorff's supervision. The method successfully employed for the extraction of conia from organic solutions was to shake these, after making them alkaline, with petroleum ether (*i.e.* the more volatile portion of petroleum oils). The poison was then recognised by tests which do not appear to be new. Zalewski states that conia may be detected in the blood very readily after every trace has disappeared from the empty stomach, even when death has not supervened very early; that the poison speedily appears in the urine, and is constantly present in that excretion during the course of the toxic symptoms. Indeed, the alkaloid is excreted nearly entirely through the kidneys, and it was detected in the urine of a dog two and a half days after the cessation of the administration of the poison. As conia was found in this secretion in quantity and in the liver, it was, perhaps, owing to its retention in that viscus that the alkaloid could be recognised in the urine on the third day after its administration.

An instructive case of poisoning by hemlock, in which Prof. A. W. Hofmann supervised the chemical analysis, is related.§ He was enabled to affirm the presence of some alkaloid from the following reactions, which, however, as he well observes, are not absolutely conclusive as to the presence of conia. The fluids with which these reactions were obtained were extracted from the contents of the intestinal canal by the methods of Duflos and Stas respectively. Their odour was penetrating, mousy, and suggestive of that of hemlock; their taste was acrid, and like that of tobacco. On causing a glass rod dipped in hydrochloric acid to approach, white clouds were formed from the vapours given off. A drop of the fluid treated with a solution of nitrate of silver yielded a white precipitate, and subsequently reduction of the silver to the metallic state. A solution of iodine gave a brownish precipitate, subsequently becoming bright yellow. The solutions submitted to spontaneous evaporation with a little dilute hydrochloric acid furnished a mass of crystals, which, examined by means of polarized light, exhibited a magnificent play of prismatic colours. The solutions

* 'Pharm. Journ.,' x, p. 430. † Ibid., x, p. 594.
‡ 'Virchow and Hirsch's Jahresber.,' 1869, i, p. 365.
§ 'Horn's Vierteljahrsschr.,' xiii, p. 1.

yielded with platinic chloride oily drops, from which, on standing for some time, red prismatic crystals separated. With tannin they gave a white precipitate, and palladic chloride gave a brownish-red precipitate. On the addition of sulphuric acid and chromate of potash butyric acid was given off.

Veratria.—Masing* contributes a paper of some interest on the detection of veratria in fluids from, and the tissues of, the animal body.

Strychnia.—G. A. Masing,† having made an extended series of experiments on the detection of this alkaloid in toxicological research, concludes—That the most important parts to be examined are the stomach and upper part of the small intestines, and that strychnia is less readily detected in the fæces and in the lower part of the intestinal canal. The liver is invariably the organ in which the poison collects most abundantly. The urine may be disregarded in all acute cases, for it invariably yielded negative results; but in chronic cases, as the alkaloid appears to be completely separated from the blood by means of the kidneys, it is possible in such cases to detect the poison in the urine, and it must be remembered that this separation begins tolerably early, and is long before it is completed. In all cases the brain yields negative results. In opposition to Cloetta's experience,‡ Masing found that, although the alkaloid is separated from the blood very rapidly, it may be detected in that fluid in small but appreciable amount; it appears to be readily given up by the portal blood to the liver, to be again slowly transmitted to the general circulation; and that there is no proof of the combination of strychnine with the constituents of the blood, for it is manifest that should such combinations take place, they must be of a very loose nature, and the alkaloid would be readily separated from them. Further, that there is no proof whatsoever of the decomposition of strychnia by the living organism. Cloetta's different results may, Masing thinks, be accounted for by imperfections in the methods of analysis employed.

Morphia.—Kauzmann§ recommends a modification of the method of Uslar and Erdmann for the extraction of this alkaloid from the viscera in cases of medico-legal investigation. He exhausts the substance to be investigated with water acidulated with sulphuric instead of hydrochloric acid. The concentrated extract is shaken with ordinary alcohol, and, after filtration of the acid solution and expulsion of the excess of alcohol, is then only to be rendered alkaline and treated with amylic alcohol. By this means the tedious and wasteful process of extracting the solution in amylic alcohol with acidulated water may be omitted. By repeated solutions and purifications the alkaloid was obtained in a pure state. Fröhde's molybdic-acid test was found to be the most delicate; it furnished a distinct reaction with 1-12,000th of a grain of morphia.

Venom of serpents.—Dr. Weir Mitchell,‖ of Philadelphia, U.S.A.,

* 'Pharm. Zeitschr. f. Russ.,' vii, p. 657; 'Zeitschr. f. Analyt. Chem.,' 1869, p. 238.
† Ibid., vii, p. 639; ibid., p. 234.
‡ Zeitschr. f. Analyt. Chem.,' 1869, p. 265.
§ 'Virchow and Hirsch's Jahresber.,' 1868, i, p. 362.
‖ 'Med. Times and Gaz.,' 1869, i, p. 137.

communicates the results of his prolonged and difficult researches on the venom of serpents. He settles beyond doubt the harmlessness of the venom when ingested; and he shows, moreover, that it is indifferent whether digestion be active at the time or the stomach empty. In every case the animal escapes, nor does the amount of the poison seem in any way to affect the result. The series of experiments by which this curious immunity was settled and its causes studied is too long for detail. It showed that all mucous membranes refused passage to the venom, save only the lining of the lesser bronchi and air-cells, if, indeed, these membranes can be said to be mucous in character. When a teaspoonful of venom was given to a pigeon (one fourth of a drop of venom is fatal to a pigeon if injected into the blood or tissues), and its fæces and intestinal contents were collected, they were in two or three days altogether free from the toxic power of venom. These experiments were beset with difficulty, because the infusions made from the intestinal contents were themselves often competent to kill if no venom was present.* While the mucous membranes deny passage to venom, the serous membranes allow it to pass through them with a singular ease, and to this there is no exception. The continuous hæmorrhage from fang wounds, and the secondary extravasations which usually have been assigned to some blood alteration alone, are attributed to a strange weakening of the small vessels. Dr. Mitchell suspects that observers will soon discover for other serpents, as he has done for the rattlesnake, that the mortality of their fang wounds has been grossly exaggerated, and says that if this be properly understood we shall hear less of the high value, as antidotes, of the many innocent substances, such as olive oil, snake-root, or common salt. Let the physician, he says, called to see a bitten person calmly estimate the chances for his patient, noting if he have one or two fang marks, and ascertaining if the snake were a captive and had been a long time without using his teeth. Thus prepared, and aware that the bite is not of necessity fatal, he will be less apt to resort to the frantic therapeutics of quarts of strong whisky and the like. When any one has been bitten the finger should be at once surrounded by a broad band on the cardiac side of the injury, or the like precaution taken on the arm; then the bitten part should be cut out, or the finger amputated, or burnt with a red-hot iron. No other local means are worth much at this stage of the poisoning. In any case free incision is proper, and the use of a cupping-glass, where this can be had in time, and where the point attacked allows of its employment. The next step is to reassure the patient as much as possible, so as to lessen his alarm, and as soon as he feels sick or weak, and the pulse flags, he should be stimulated with enough alcohol in some shape to restore his powers and increase the heart-force. By this time the part bitten will most likely be swollen. The ligature must be relaxed, and as soon as the poison begins to tell on the general system it is to be tightened afresh, and the stimulus given anew. Under any circumstances of local treatment there will be left in the wound poison, which must at some time enter the general blood current, and by this plan of intermittent

* Vide 'Guy's Hosp. Rep.,' 1866, p. 37, and this 'Retrospect,' 1865–6, p. 453, for similar observations by Drs. Hilton Fagge and Thos. Stevenson.

ligature and successive stimulations the patient's safety, and that of the part hurt, are best provided for. Dr. Mitchell believes that if it were well understood that the thousand local remedies in popular repute are valueless, and that the simple and decisive means above described should alone be used, very few deaths from snake-bite would occur. He also attributes the beneficial effects attributed to the use of carbolic acid to the fact that it "slows" the absorption, and hence the venom poisoning. It is hence of use in dressing the fang wounds.

Professor Halford,* of Melbourne, recommends the use of ammonia as an antidote for snake venom, and publishes some remarkable results of this method of treatment. About twelve minims of the strongest Liq. Ammoniæ is diluted with thrice its bulk of water, and injected into a superficial vein, by preference the radial. The results certainly appear to have been marvellous.

Blood-stains.

Dr. Joseph C. Richardson,† of Pennsylvania, has made an elaborate examination of blood-stains, and has succeeded in detecting blood-corpuscles in stains in which it has hitherto been thought impossible to recognise them, viz. those where the fabric bearing the stains has been washed. This he has done by employing the higher powers of the microscope, as, for instance, a 1-25th inch objective. With such powers even corpuscles which have been decolourised through the washing away of their hæmato-crystalline are recognisable by their peculiarities of form and structure, which are fully described in the memoir. The author identifies these washed corpuscles with the straight or slightly waved filaments, sometimes more fibrous, sometimes more wrinkled and homogeneous, of Virchow, long thought to be masses of fibrin, and states that they contain very little fibrin. He appends the following very practical advice:—"In examining the moistened clot great care must be taken to avoid any movement of the cover upon the slide, which, when it occurs, often rolls the interposed discs into an apparently homogeneous mass; and it is advisable to keep up a current of fresh water, at least until all tinge of colour is removed from the clot, otherwise none but the granular lymph-corpuscles may be visible. Dr. Richardson states that, although it must be admitted that the blood-corpuscles of a few mammals approximate so closely in size to those of man as to render their discrimination doubtful, yet in the practical testing of blood-stains in criminal cases it is rarely found that such a decision is necessary, since, as a rule, justice only requires that a positive diagnosis shall be made between human blood and that of animals which are commonly slaughtered for food, such as the ox, the sheep, the pig; or of birds, as for example, chickens, ducks, &c., in regard to all of which he believes that when the discs have not undergone disintegration a first-rate 1-25th inch objective will enable us to determine the question easily and beyond doubt. Unfortunately the paper is marred by the omission of measure-

* 'Med. Times and Gaz.,' 1869, i, p. 123.

† 'Amer. Journ. of Med. Sc.,' 1869, cxv, p. 50.

ments of the size of the red blood-corpuscles of various animals as seen under such high powers. The measurements of the human blood-corpuscles are given, however, with great precision.

Hanging and Strangulation.

Dr. Bremmé * concludes in the following terms an article entitled "Has the demonstration of microscopic extravasation in the supposed mark of strangulation on the body of a person supposed to have been hanged or strangled any diagnostic value in the determination of the question whether the ligature was applied before or after death?" (1) No extravasation occurs in the subcutaneous tissue beneath the site of ligature on the hanged or strangled body, provided death is instantaneous and the body is released from the cord immediately after death. (2) Extravasation occurs if, the death being instantaneous, the neck remains long in the ligature. (3) Extravasation is met with when death has not been instantaneous, whether the ligature have been removed early or been allowed to remain for a long time after death. (4) It is impossible to distinguish between the *intra-vitam* and the *post-mortem* mechanical extravasations thus produced. (5) As a consequence, the demonstration of microscopic extravasation beneath the mark of the ligature in those supposed to have been hanged or strangled has no diagnostic value in determining the question, was death the result of strangulation, or was the ligature applied to the corpse after death? This paper is illustrated by a beautiful plate, exhibiting the microscopic appearances observed.

Prof. Tardieu † contributes an excellent memoir on this subject, entitled "Étude Médico-légale sur la Pendaison," which has also appeared in a separate form. The paper is well illustrated by several woodcuts, showing the position of the body and ligature in several curious cases of hanging. He concludes his observations on the diagnostic signs of hanging during life in the following words:—"In striving, as we have done, to appreciate correctly the diagnostic signs of hanging during life, we perceive that some signs demonstrate the fact of suspension; these are, the state of the neck, the mark of the ligature, the appearance of the face, the turgescence and colouration of the sexual organs and lower extremities; whilst others demonstrate the persistence of life at the moment when they were produced—these are superficial or deep-seated ecchymoses, extravasations and infiltrations of blood into the cellular tissue or into the muscles themselves in the cervical region, the presence of sanguinolent froth in the air-passages, and general engorgment of the lungs. The expert can only prove with certainty that the body of the individual under investigation had been suspended during life, and the case was really one of death from hanging, when these two classes of signs are in exact accordance. There is no one unique, exclusive, and exact sign, but rather the assemblage of signs, and their correlation carefully established, which enables us to conclude that suspension took place during life."

* 'Horn's Vierteljahrsschr.,' xiii, p. 247.
† 'Ann. d'Hyg.,' xxxiii, p. 78.

Dr. Andrew Allison* contributes a paper on the diagnosis of death from hanging. We must refer our readers to the original memoir, as it is one which does not admit of any useful abridgment, but will repay a careful perusal.

Pregnancy.

Dr. E. Strohl† draws attention to the signs of a previous pregnancy and delivery, and arrives at these conclusions:—That the os uteri may acquire considerable dimensions without any anterior pregnancy having occurred; that delivery may occur at the full term without causing any laceration of the os uteri; that pregnancy may go on to the full term of gestation and yet no abdominal seams be produced, and that seams may be met with on the thighs without any anterior pregnancy having occurred.

Infanticide.

Prof. Skrzeczka,‡ in writing on injuries to the skull in new-born children, states—(1) That the form of the edges of a wound in cases of injury to the skull of a new-born child does not determine whether the injury has been inflicted during life or after death. (2) When extravasation either over or under the site of injury is altogther absent, and the edges are pale, it must be concluded, if advanced decomposition do not preclude the formation of any opinion on the case, that the wound had been inflicted after death; but intra- or extra-cranial extravasation at a distance from the seat of injury does not prove the infliction of the injury during life. (3) Post-mortem injuries to the skull may have red and bloody edges, and in these cases may also be associated with extravasation of blood beneath the periosteum at the seat of injury. (4) Destruction of the bony calvarium, or extravasation inside the cavity of the skull, indicates that this condition has arisen post-mortem, but extravasations beneath the scalp are to be referred to the process of parturition. (5) That the injury to the skull occurred during life may be concluded (*a*) when there are coagula about the seat of injury and extravasation, although fluidity of the blood, on the other hand, in no way contradicts the supposition that the wound had its origin during life; (*b*) when there is injury to the scalp with signs of vital reaction; (*c*) when there is extravasation of blood beneath the skin and the periosteum, and at the same time beneath the bones upon the arachnoid, and eventually into the brain itself, evidently in connection with the injury. (6) Large hæmatoceles with a single fracture of the bone beneath, especially when the bone is thin, point to an injury during delivery. (7) Simple fractures, without hæmatocele, may be explained by the fall of the child. (8) Fissures with more or less smooth edges are either post-mortem or occur during birth from the fall of the child. (9) Destruction of the skull with intra- or extra-cranial extravasation points to deliberate murder. The arguments of the paper are ably supported by reference to clinical cases.

* 'Lancet,' 1869, i, p. 636. † 'Ann. d'Hyg.,' xxxiv, p. 141.
‡ 'Horn's Vierteljahrsschr.,' xi, p. 69.

Dr. Falk,* of Berlin, concludes a paper on the colour of the lungs of new-born children and its medico-legal signification in these terms:—(1) The colour of the lungs of a new-born child may vary, owing to variations in the physiological and morbid conditions, from white through every gradation of colour to black. (2) During the earlier stages of fœtal life the lungs are of a pale red colour, but with the augmentation of the quantity of blood in them consequent upon the increase of the special tissue elements they become of a darker colour, yet in such a manner that no certain conclusion can be drawn from their colour as to the period of uterine life. (3) In children which are born at a variable period, that have yet made no respiratory movements resulting in the inspiration of air, the colour of the lungs is, as a rule, dark blue, but in those that have inspired air the colour is bright red. A more precise characterisation of the colour of the fœtal lungs is impossible, since this depends upon the varying amounts of air and blood in these organs, a fact which makes it evident that all parts of the lungs do not at one and the same time exhibit the same shade, especially the shade of a lung that has respired. (4) The dark colour of the fœtal lungs may be replaced by a bright colour, and still more readily the bright colour of the air-lungs may give place to the dusky colour of the fœtal state, without the lungs in the former category ceasing to be airless, and those of the latter becoming airless. The ideas conveyed by the words light and dark on the one hand, and fœtal or containing air on the other hand, are not in congruity. (5) Consequently, Casper's† insular marbling does not *per se* serve as a proof of the extra-uterine condition, for such an undecided separation between light and dark tissue does not necessarily indicate solely an incomplete inflation of the lungs with air, since it invariably appears after a short period of extra-uterine life. (6) More important than the fundamental colour of the lungs and the speckled markings that have just been described is the circumstance that in the air-lung, in consequence of anatomico-physiological changes which respiration brings about, a kind of mosaic network of clearly defined blood-vessels is perceptible around the alveoli, and that these, being inflated with air, have the appearance of pearly vesicles. This mosaic marking is equally intense in all parts of the lungs, but yet when met with over even only a limited surface it must be accepted as a proof that respiration has taken place. Indeed, since premature attempts at respiration scarcely ever result in the introduction of air in notable quantity into the alveoli, if this last kind of respiration be not proved by clinical observation to have existed in each individual case the conditions of the lungs now described must be considered to have been brought about by extra-uterine respiration. The colour of the lungs hence furnishes, indirectly, valuable data for determining the question of live-birth. (7) The varying amount of blood in the lungs, even in the extremes of anæmia and hyperæmia, reflects no light on the forensic signification of the colour. The recognition of the mosaic marking may be rendered difficult, it is true, especially by plethora of blood, nevertheless the use of a lens

* 'Horn's Vierteljahrsschr.,' x, p. 1, 207.

† 'For. Med. N. S. S.,' iii, p. 51.

will easily bring out the diagnostic markings. (8) Anæmia of the lungs may be readily diagnosed by their pale, almost white, appearance; hyperæmia by their dark blue, almost black, colour. These modifications of colour obviously result, especially in lungs which have respired, from poverty and plethora of blood respectively. (9) In hyperæmia the colour of the lungs can be used solely for the purpose of diagnosis between vital congestion and post-mortem hypostasis. (10) Putrefactive changes also produce a dark colour in the air-lung; and, indeed, in this form of lung, as well as in that which is in the fœtal state, commencing decomposition is most readily recognised by the colour. The distinction between an air-lung and one in the fœtal condition first becomes impossible when the general development of putrefactive gas-bubbles, and the falling asunder of the pulmonary tissue, renders the organ no longer recognisable. (11) White hepatization, which is a rarer pathological process, renders the fœtal lung brighter in colour, and very like an anæmic air-lung; the hydrostatic test alone suffices to decide between the two conditions. (12) Through red hepatization the air-lung approximates the fœtal tissue in colour, especially the hyperæmic fœtal tissue; and it is impossible from the colour alone to diagnose the pneumonic process. (13) Even in the later periods of life the colour of the lungs does not alter much, and there is nothing characteristic in the colour of the lung immediately after birth. (14) When artificial respiration has resulted in the successful introduction of air into the lungs it alters the colour of the parenchyma in such a manner that this resembles in a very deceptive manner an anæmic air-lung. It is only with great restriction, and even then not always, that it is possible to deduce from the colour of the lung itself proof that respiration has been established. Such cases of artificial respiration seldom, however, come under observation *in foro*.

Real and Apparent Death.

Dr. Laborde* has read a paper before the French Academy, of which the following is a *résumé*. If a sharp, well-tempered, steel needle is plunged to a sufficient depth into the tissues of a living man or animal, at the end of a variable but generally very short time, the needle, on withdrawal, will be found to have lost its metallic lustre to a greater or less extent; it has become tarnished or oxidized. Cloquet, twenty years before, had observed the same fact. Laborde states that if, on the other hand, a similar needle be plunged into the muscular mass of a dead person, and be left there for twenty minutes, or even for an hour, it will be found, on withdrawal, to retain its lustre and to have undergone no oxidation. He has repeatedly confirmed these observations, and he states that the oxidation of a needle under the conditions stated above, and the thermo-electric phenomena which are intimately related to that process, constitute a sure sign of apparent death only, whilst the complete absence of oxidation and of the concomitant phenomena is a certain sign of actual death.

* 'Bull. de l'Acad.,' xxxv, p. 680.

M. E. Dubout* proposes another test to distinguish between real and apparent death. He instils into the eye a few drops of a solution of atropine. If there be no action on the pupil it may be affirmed that muscular contractility has disappeared, and hence that life is quite extinct. It will always be necessary, however, to resort to a counter-proof, and we have in the action of substances (such as Calabar bean) which cause contractility of the pupil a very simple means of avoiding error.

Spontaneous Combustion.

Dr. Alexander Ogston,† of Aberdeen, publishes a case of this rare, and somewhat doubtful, phenomenon that came under his own observation, and details several other cases that have occurred in the practice of other physicians. He is of opinion that all the trustworthy cases recorded speak merely for increased combustibility on accidental ignition, and not for spontaneous ignitability. The possibility of, or mode of origin of, spontaneous ignition, he thinks, need not be discussed, since there is not in one of the trustworthy cases the slightest call upon us to assume its existence. Dr. Ogston's case is stated as follows:—"On the 14th March, 1869, my father and I were requested to examine the remains of Mrs. Warrack or Ross, æt. 66, who resided alone in a house near the Bridge of Dee, Aberdeen. She was said to have been stout, of intemperate habits, and her son stated that he had left her, at 10 a.m. on the 14th, in her usual health. She was found at 11 a.m. on the same day, lying burnt on the lower steps of the stairs of her house, on her left side. The house was pervaded with a disagreeable smell, but more like that of burning straw than of burning animal matter. The room which she usually inhabited, the door of which was within two yards of the place where she lay, had the same smell. The chair in which she sat stood in the middle of the room, its back almost entirely consumed, and its arms entirely so. The seat of the chair showed traces of the action of fire. The bed, about two feet from her chair, had its straw mattress slightly burnt at its fore part. The woodwork of the bed and the curtains were uninjured. Her chair was about four feet from the fireplace, and about two feet from an uninjured mahogany table, on which stood an empty beer bottle smelling of whisky. Nothing else in the room was touched by fire. The stairs were of wood, and underneath and in the immediate vicinity of where she lay they were charred to the depth of a quarter of an inch. The perpendicular bars of the hand-rails similarly charred beside her for a foot up; the top rail and the wall, which was half a foot from the hand-rail, blackened by smoke. The condition of the body, however, showed that the fire had caused the greatest alterations in it. The hair was burnt off, the soft parts of the face and front of the head burnt off, the bones exposed, blackened, and calcined. The back of the head, the neck, and the trunk everywhere, converted into greasy charcoal to the depth of about an inch, the skin totally removed, and the bones of the trunk lying bare, blackened, and

* 'Archiv. Gén.,' Aug. 1870, p. 240.
† 'Med.-Chir. Rev.,' xlv, p. 189.

calcined. The front wall of the abdomen totally destroyed and wanting; the intestines burned into a hard and blackened mass; the liver converted into ashes to the depth of an inch, but retaining its shape, its left lobe projecting nine inches from the margins of the ribs. The upper limbs distorted; the elbows strongly flexed and everywhere charred to a great depth, the bones, however, even of the fingers, preserving their position. The right thigh had its muscles still uncharred, but of the appearance of roasted beef, and very dry; the skin and superficial muscles totally burnt away. The right leg only partially attached to the thigh, and entirely converted into a greasy, black, charred mass, even the bones not escaping. At the lower part of this right leg the bones had the soft parts entirely burnt away from them, and were black and calcined. The right foot totally detached from the leg, and converted into a soft, black, greasy, and shapeless cinder, through which the finger could be pushed with ease. The left leg and thigh in a condition similar to that of the right extremity, but still attached to the foot, which was a charred and shrivelled mass similar to the right foot. Not a vestige of clothing remained anywhere." Dr. Ogston is inclined to adopt Dupuytren's explanation, that when the fire gains the clothes it burns the skin, which cracks and allows the fat to run out; part of this flows down on the floor, the rest serves to support the combustion, and with free access of air everything is burnt.

Insanity.

One of the most important questions that has arisen within the last two years relating to the forensic aspects of insanity is that of fractured ribs, several cases having occurred in which it seemed doubtful whether fractures, discovered only on post-mortem examination, had arisen from natural causes, or were the result of excessive violence with no predisposition to fracture.

Dr. Clouston,* of Carlisle, and others, having called attention to the altered condition of the ribs in cases of general paralysis, Dr. T. L. Rogers,† with the chemical assistance of Dr. J. C. Brown, submitted these ribs to a more rigorous test than mere tactile examination. It was found that the ratio of organic constituents to earthy matter is much greater, while the ratio of lime to phosphoric acid is distinctly less in the ribs of paralytics than in those of healthy adults, and that there are the same differences between the composition of healthy ribs and those of paralytics as between the composition of the adult large bones and those of the fœtus. Generally, the composition in cases of paralysis approaches that observed in cases of osteo-malachia. The bones submitted to analysis were limited to those taken from the bodies of patients who had died of general paralysis. The result of the analysis is suggestive rather than conclusive as to the condition of the bones in patients the subjects of general paralysis. As far as it goes, it shows that in this disease the composition of the bones is changed by

* 'Lancet,' 1870, i, p. 191.
† 'Liverpool Med. and Surg. Rep.,' iv, p. 85.

the proportionate increase of the organic constituents over the earthy, and this will partly account for the frequency of fractures among insane patients, and also for the position and form of the fractures, which in every case but one detailed in this memoir occurred in the anterior portion of the ribs, a few inches from the cartilages, and not at the angles, as is generally found to be the case in general hospitals. The fractures in the insane, too, were generally simply an even division of the bone, without any jagged edge, and not generally projecting through the periosteum.

Dr. Sankey takes up the subject in a paper read before the Medico-Psychological Association.* He finds from a review of all the published cases that the existence of most of these fractures has only been discovered after death; that the fractures have nearly all been very extensive, much more so, in fact, than is usually met with from violent accidents among the sane; that the patients have nearly all been recently admitted into the asylum, and that the subjects have all been males. He then states that paretic patients in a certain stage of their malady are known to be furiously excited. They throw themselves about with reckless violence. They frequently attack the bystanders, and they thus often become engaged in scuffles. They are consequently exposed to all kinds of blows and falls of a purely accidental character. The state of the nervous system is such that the ordinary excited acts are not performed at all, or are not so rapidly executed as to ward off or modify these direct injuries. There is, then, in them such a dulness of sensibility or common sensation that they do not feel the same amount of inconvenience or pain from injuries, so that the effects are masked, and there is nothing to indicate what has taken place nor to note the exact period when the injury occurred. Dr. Sankey further proceeds to give the following aids towards the diagnosis of paresis from insanity proper:—1. In paresis the outbreak is more sudden than in insanity proper. 2. It follows very frequently upon some great mental emotion. 3. It is wholly free from, or is very rarely indeed preceded by, a short stage of melancholic symptoms. 4. The delirium is of a peculiar character in paresis. This peculiar delirium is described. 5. If the patient is very violent, and the disease is a second attack of insanity, the disease is not general paresis. 6. If the disease has been preceded by a long melancholic stage, and has been followed by illusions of any of the special senses, the disease is almost surely not general paresis.

* 'Med. Times and Gaz.,' 1870, i, p. 202.

REPORT

ON

MATERIA MEDICA AND GENERAL THERAPEUTICS.

BY

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The following is an abstract of the reports published relating to new remedies:

Apocodeia.—Encouraged by the results obtained by the use of apomorphia, Dr. Wickham Legg* has experimented with this new organic base, discovered by the late Dr. Matthieson and by Prof. Cary Foster.† Dr. Legg finds that its action on man is only feeble, and that it is unlikely that it will ever be largely employed in the treatment of disease, although it is possible that its great bitterness may hereafter prove of service. On account of the extreme local irritation which the alkaloid produces, it is wholly unfitted for hypodermic injection. The base was administered in the form of hydrochlorate.

Apomorphia,—This is a new alkaloid, prepared by the late Dr. Matthieson‡ by the action of strong solution of hydrochloric acid upon morphia. It differs from this latter base by the elements of a molecule of water (the formula of morphia being $C_{17}H_{19}NO_3$, that of apomorphia is $C_{17}H_{17}NO_2$). Dr. Gee, in reporting to the Clinical Society§ the results of its administration, shows that it is a certain and promptly acting emetic, and that as such it possesses the following advantages over all others at present in use:—(1) It acts in extremely small doses, one tenth of a grain being sufficient, when injected subcutaneously, to produce vomiting in ten minutes, while by the mouth twice as much will act in twenty minutes. (2) It possesses no irritant properties, and can, therefore, be injected under the skin without the slightest inconvenience. (3) It acts with unfailing certainty. (4) The vomiting produced is not followed by nausea.

Chloral hydrate.—This substance is undoubtedly the most valuable

* 'St. Bartholomew's Hosp. Rep.,' 1870, p. 97.

† 'Phil. Trans.,' 1863, p. 360.

‡ 'Proc. Roy. Soc.,' xvii, p. 455.

§ 'Med. Times and Gaz.,' 1869, i, p. 641; 'St. Bart. Hosp. Rep.,' v, p. 215.

and important of recent additions to the articles of materia medica, and we owe to Dr. Liebreich, of Berlin, the merit of its introduction.

Chloral is trichlorinated aldehyd, *i. e.* aldehyd in which three of the hydrogen atoms have been replaced by an equal number of atoms of chlorine, and its composition is represented by the formula C_2HCl_3O. It was discovered by Liebig in 1839, and is prepared by the action of chlorine on alcohol, aldehyd, or liquids containing these substances. Chloral, which is a liquid at ordinary temperatures, when mixed with a small quantity of water takes up a molecule of this and forms a solid hydrate, C_2HCl_3O, H_2O, and it is this hydrate, dissolved in water or other appropriate solvent, that is used for medicinal purposes, either subcutaneously or internally. The dose for an adult varies from 25 grains to 100 or even 120 grains, according to the size of the individual, 40 grains being an average dose. It is thought by many to be a pure hypnotic, inducing sleep, removing sensibility, bringing down the temperature, and causing extreme muscular relaxation. The diminution or abolition of sensibility is, perhaps, only a temporary condition, as afterwards there appears to be an increase of sensibility. One theory of the action of chloral hydrate is that, under the influence of the alkali of the blood, chloroform and a formate of the alkali are formed, and that it is the chloroform thus generated which produces hypnotic effects. Chloral and its hydrate, when treated with an alkali, at once yield chloroform and a formate ($C_2HCl_3O+NaHO=CHCl_3+NaCHO_2$). The uses to which chloral hydrate is now put are very numerous, and it has become quite a common pharmaceutical substance.

Passing by the various, and in some respects contradictory, statements which have appeared in English serial publications, for these must be familiar to our readers, we find the following among Continental literature:

Drs. Labbé and Goujon* have made, apparently, an elaborate series of experiments on animals, with the view of elucidating the physiology of the action of chloral hydrate. This was administered in three different ways—injected directly into a vein, subcutaneously injected, and passed into the stomach. The observers come to the conclusion that chloral is not converted into chloroform in the organism, for no odour of the latter substance could be detected in the breath, and, till after the addition of potash, the blood of a dog that had received a large dose of chloral had no odour of chloroform. A dog to which twelve grains of the drug was administered, by injection into a vein, recovered, whilst very small quantities of chloroform thus administered proved fatal. It is admitted, however, that in this case some chloroform was generated, for the breath of the animal smelt of that substance. Another proof that chloral is not converted into chloroform is stated to be that after its administration the urine did not react with Fehling's test for sugar, as it is well known is the case after a dose of chloroform has been taken.

Bouchut† has likewise experimented with this agent, and concludes —(1) Chloral is a powerful sedative to the motor and sensory nervous

* 'Gaz. des Hôp.,' 1869, p. 483. † 'Bull. de Thér.,' lxxvii, p. 433.

systems. (2) Non-crystalline chloral and that smelling of chloroform are dangerous and must be rejected. (3) The dose is seventy-six to ninety grains for an adult, and fifteen to thirty grains for a child. (4) On account of their proneness to decomposition, preparations of chloral ought not to be kept long. (5) Chloral hydrate is best administered by the mouth, but the administration by enema is also admissible. (6) Chloral hydrate is contra-indicated in diseases of the heart and brain. (7) The hypnotic action of chloral is founded on its decomposition by alkaline solutions (into chloroform, Ed.), and its anæsthetic properties result from the same cause. (8) It is dangerous to use chloral hydrate for hypodermic injection. (9) The tone of the arteries increases during its use, whilst the frequency of the pulse decreases, but this returns to the normal standard when the patient awakes. (10) As long as sleep continues, the urine gives no reaction for sugar with Fehling's solution, but on the following day, when the chloral has passed into the urine, this secretion gives a sugar reaction. (11) Administered by the mouth, chloral hydrate seldom induces vomiting and never diarrhœa. (12) After the use of non-toxic doses the temperature of the body falls slightly. (13) Simultaneously, the perspiration decreases and the skin becomes dry. (14) Chloral hydrate has this advantage over those anæsthetics that are inhaled, that the dose can be exactly apportioned. (15) The action of chloral is identical with that of chloroform, except that it is slower and more enduring. (16) In certain diseases chloral produces no lasting dangerous psychological symptoms or excitation of the muscular system. (17) As a rule, the sleep produced by this drug is highly anæsthetic, and is seldom associated with hyperæsthesia. (18) The maximum of anæsthesia is produced by doses of thirty to seventy-six grains, according to the age. If it be complete it serves for painless tooth extraction and other operations. (19) Chloral hydrate has this advantage over the opiates, that it induces sleep more quickly, and does not destroy the appetite nor produce headache or vomiting, and in large doses it reduces the temperature of the body, instead of, like opiates, raising it. It may likewise be employed almost continuously without losing its hypnotic effects. (20) Chloral hydrate is a sovereign remedy for rheumatic pains, the pains arising from the passage of urinary calculi, from a carious tooth, and from burns. (21) In eclampsia, and for obstetric operations chloral is as useful as chloroform. (22) Lastly, it allays the dangerous agitations threatening the life of the patient observed in severe cases of chorea.

Many clinical observers have noted that chloral is contra-indicated in lung diseases where there is a tendency to dyspnœa.

Bromal hydrate.—This substance, which is closely allied in its chemical composition to chloral hydrate, has been recently employed as a therapeutical agent by Dr. E. Steinander,* and by Mr. Dougall,† of Glasgow. Bromal hydrate is prepared in a manner analogous to that used for the preparation of chloral hydrate. It has the formula $C_2HBr_3O, 2H_2O$.

* 'Schmidt's Jahrb.,' 147, p. 26.
† 'Glasgow Med. Journ.,' iii, p. 34.

Dr. Steinander finds this substance very useful in cases of epilepsy. Mr. Dougall, who has experimented on animals, and only slightly on man, finds that the symptoms produced by its administration are restlessness, imperfect sleep, dyspnœa, orthopnœa, salivation, and, in fatal doses, convulsions. He also found that when bromal hydrate was used hypodermically the simultaneous injection of an alkali neutralizes the restlessness and other unpleasant symptoms. Should these experiments of Mr. Dougall's be confirmed, it is improbable that this agent can ever be employed to any great extent in therapeutics. That it will ever rank with chloral hydrate as an hypnotic appears in the mean time improbable.

Ethylates and caustics.—Dr. B. W. Richardson* has introduced these bodies, well known to scientific chemists, as caustics, and believes them to be the most effective and manageable of all substances for that purpose, and that they will prove of essential service in cases of cancer when it is thought desirable to destroy the structure without resorting to the knife, and in cases of nævus and other simple growths. The ethylates of the alkali-metals are crystalline substances prepared by the action of alkali-metals, as, for instance, sodium on alcohol, and they are usually regarded as alcohol in which one atom of hydrogen has been replaced by metal. Potassic ethylate is the most energetic of the ethylates. They are readily soluble in alcohol, and alcoholic solutions of any desired strength can be readily applied with a glass brush or injected by the needle; and a slow or rapid action can be insured at the will of the operator. The rationale of their action is doubtless that on account of their avidity for water they attract this from the tissues, and that then caustic alkali is produced and alcohol is reformed, thus:—$(C_2H_5)\,KO + H_2O = (C_2H_5)HO + KHO$.

Triethylic ether.—When the above ethylates are acted upon by chloroform, triethylic ether is produced, thus:—$3C_2H_5NaO + CHCl_3 = 3NaCl + C_7H_{16}O_3$ (triethylic ether). Great care is required in the preparation to secure a fair product, for the action is very energetic. Triethylic ether is a heavy, aromatic, ethereal fluid, having a sp. gr. of 0·896°, a boiling-point of 297° Fahr., and a vapour density of 5·114. Physiologically, it appears to act much like alcohol. Dr. B. W. Richardson† has used it as a menstruum for ethylic ether for the production of general anæsthesia. Enough of the triethylic ether is carried over during the evaporation of the ethylic ether to form with this a mixed vapour which is very pleasant to breathe and equable in action. The ether forms also an excellent mixture with bichloride of methylene.

Acetic ether.—Dr. Horatio E. Wood,‡ of Philadelphia, proposes this, to the chemist well-known substance, as an anæsthesic. Acetic ether $(C_2H_3O)(C_2H_5)O$ is prepared by distilling alcohol with sulphuric acid and an acetate. It has a peculiar, pleasant, fruity odour, very closely resembling that of ripe apples, which, perhaps, owe their smell to this ether or to malic ether. It is less volatile than ordinary ethylic ether, and is comparatively non-inflammable. In pigeons and rabbits it induces perfect insensibility without nearly so much previous struggling

* 'Med. Times and Gaz.,' 1870, ii, p. 469. † Ibid., p. 472.
‡ 'Amer. Journ. of Med. Sc.,' cxix, p. 137.

as when ordinary ether is used, and the animal after a few minutes of tranquil sleep awakes without struggling.

New principles from opium.—O. Hesse* has made a contribution to our knowledge of the opium bases, and describes some apparently new products which may hereafter prove of use in therapeutics. His paper embraces a full description of meconidin, laudanin, lanthopin, thebain, thebenin, thebaicin, papaverin, and their salts.

Paytin.—O. Hesse† also describes a new alkaloid which he has extracted from the white quinine bark of Payta.

The following notes refer to new investigations into the actions of old remedies:

Ergot and ergotine.—Prof. Bailly‡ has investigated the therapeutical properties of ergot and of the ergotine of Bonjean (an aqueous extract of ergot), and concludes thus:—1. On account of its abortifacient properties, ergot of rye plays an important part in obstetric practice when it is necessary, either during parturition or afterwards, to increase the contraction of the uterus; and for overcoming uterine inertia, ergot itself is, in all cases, preferable to ergotine. 2. In clinical medicine the curative power of ergot and of ergotine, being much more limited than during *accouchements*, is confined to those cases in which therapeutical agents can act upon the uterus—hæmorrhages, uterine congestions, hypertrophies of the neck of the womb—to a doubtful action in hæmorrhages from the mucous membrane of the lungs, the intestines, and the bladder—to a perceptible but not very powerful action in abating inflammatory affections of the spinal cord, and to a sedative action upon the circulation. 3. In surgery Bonjean's ergotine, dissolved in water, possesses undoubted hæmostatic properties when used for external hæmorrhages caused by the bursting of capillary vessels, or of vessels too small to require the application of a ligature.

Benzine.—Dr. Bottari§ states that the inhalation of the gas which is developed during the purification of illuminating gas exercises an important curative influence in uncomplicated cases of hooping-cough, and that it is probable that this result is due to the presence of benzine (phenylic hydride, $C_6 H_6$). He was hence induced to try the therapeutical action of this liquid in hooping-cough. From ten to twenty minims were administered in mucilage or in syrup, and sometimes the vapour was likewise inhaled. In the earlier stages the medicament appeared to exercise no beneficial effect; but in the second stage, and where there was no congestion of the respiratory organs, the results were highly beneficial and rapidly produced.

Morphia and chloroform.—A published lecture of Prof. Cl. Bernard's,‖ which is, however, unsuitable for useful abstraction, on the physiological effects of morphia and of its combinations, will amply repay the practitioner's perusal. The lecture contains the details of many experiments performed on animals with these two medicaments.

* 'Ann. der Chem. u. der Pharm.,' cliii, p. 47.
† Ibid., cliv, p. 287.
‡ 'Bull. Gén. de Thér.,' lxxviii, pp. 433, 481, 529.
§ Ibid., lxxviii, p. 41; 'Lo Sperimentale,' fasc. 10, 1869.
‖ Ibid., lxxvii, p. 241.

Narcein.—Dr. Fronmüller and also Dr. Kersch* have found narcein to be useless in procuring sleep, and deny that it possesses any narcotic properties whatsoever.

Aniline.—Prof. Winigradow† concludes from his own experiments on the action of aniline in the treatment of epilepsy and chorea that—1. The continued use of sulphate of aniline, in progressively increasing doses, yields in many cases favorable results in the treatment of these diseases. 2. The chief action of aniline on the nervous system consists of a depressive influence on the spinal marrow. 3. Tactile sensibility is also diminished, though in a lesser degree. 4. The depression above alluded to does not simultaneously abolish all kinds of sensation, but these gradually and successively cease. 5. Aniline likewise acts as a depressant of the peripheral nerves of sensation. 6. After removal of the cerebrum in animals aniline shows its action in violent and long-continued convulsions. 7. The depression of the spinal cord advances from above downwards. 8. Derangements of the power of co-ordination also manifest themselves. These were noted in frogs from which the cerebrum had not been removed. 9. We can remove the spasms of strychnia poisoning by means of aniline. 10. Aniline decreases the frequency without lessening the force of the cardiac pulsations.

Santonin.—Dr. W. G. Smith,‡ of Dublin, has experimented with this substance, and confirms Rose's observation as to visual derangements and a peculiar colour of the urine, being produced by a dose of four or five grains of santonin. He was enabled to detect the drug in the urine by its peculiar reactions, but the santonin existed certainly in an altered form in this secretion. The author's experiments appear, however, to throw but little light on the cause of the visual derangements observed.

Dr. Krauss,§ who has experimented with this drug, arrives at the following conclusions. (1) Santonin probably passes into the blood as sodic santonate; since it is sparingly soluble, a part remains unabsorbed, but it is not, as Rose asserts, found in the fæces in the form of crystals. (2) In small doses it acts as a narcotic poison, in large doses as a tetanic poison. (3) In children small doses produce symptoms of poisoning. (4) The manner in which it acts upon intestinal worms—in particular Rose's view that the greater part of the santonin remains unabsorbed, and so acts directly upon the parasites—has not been proved. (5) Sodic santonate passes into the blood unchanged, appears more speedily than santonin (in half an hour) in the urine, and is likewise excreted more readily than this substance. It acts as efficiently on the parasites as santonin, *i.e.* a quantity of santonin converted into its sodic salt produces the same result as the same quantity of santonin itself, but with less fever and local effect; it is therefore to be preferred, since the danger of poisoning by it is less than with santonin.

Eucalyptus globulus.—The leaves of this tree, a native of Australia,

* 'Schmidt's Jahrb.,' 141, p. 15.
† 'Virchow und Hirsch's Jahresber.,' 1868, i, 342.
‡ 'Dublin Quart. Journal,' l, p. 266.
§ 'Schmidt's Jahrb.,' 147, p. 266.

have recently attracted attention,* and their use as a febrifuge is said to have been followed by the most beneficial results. Dr. F. W. Lorinser† gave a teaspoonful of a tincture, prepared with rectified spirit, for a dose in cases of pyæmia and tuberculosis. Dr. C. Haller‡ has used a similar tincture for ague. Prof. Franz Seitz,§ of Munich, has used the plant in intermittents and in typhus without any beneficial results. It remains to be proved, by further experiments, whether the plant really possesses the therapeutic value that many would assign to it.

Copaiba.—We owe to Bernazik‖ a highly interesting study of the physiological actions and therapeutical properties of balsam of copaiba and its active constituents. An ethereal oil and an uncrystallizable resin are alone to be reckoned among these latter. The resin is obtained by precipitating an alcoholic solution of the balsam with a lime salt, and is separated by means of alcohol as a heavy salt. The oil and the resin are present in different specimens of copaiba in varying relative amounts, so that the more fluid balsam (the so-called "Pata-balsam") contained 48·2 per cent. of ethereal oil, along with 40·5 per cent. of resin, whilst the more consistent balsam (the so-called "Maracaibo-balsam") contained only 39 per cent. of oil and 54 per cent. of resin; whilst a specimen, more than forty years old, and of a very tough consistency, contained only 12 per cent. of oil. There is also in Maracaibo-balsam about 1 per cent. of a resin insoluble in alcohol; but in no kind of balsam did the author detect any crystalline resinous acid (Schweitzer's copaivic acid). Given to healthy persons, no difference could be detected between the action of the ethereal oil and oil of cubebs, since, with each, doses of about half an ounce produced similar results. These were—nausea, abundant eructations, abdominal pain, diarrhœa, difficult micturition, and, after the first dose, increased frequency of the pulse, a rise in temperature of about one degree, greater fulness of the pulse, which, after the supervention of greater irritation of the intestinal tract, was followed by sinking of the pulse and great diminution in the temperature of the body. After the administration of each of the oils the urine was at first clear, spite of the abundance of resin in it, and even after twenty-four hours had elapsed it deposited no sediment. The specific gravity of the urine was always high, and nitric acid caused an immediate turbidity, which increased, and, in twenty-four hours, gave place to a deposit of uric acid in the midst of a turbid and reddish-brown urine. The turbid portion passed through a filter, which, especially after large doses of the oil of copaiba, became of a deep rosy red colour. By exhausting with alcohol the filter along with the precipitated uric acid, a violet-red resin was obtained, no doubt having its origin in the oxidised oil, rendered impure by the presence of a small portion of the colouring matter of the urine. The amount of resin in the urine increased with augmented doses to a certain height, from which it as quickly fell after discontinuance of the oil, so that after thirty-six hours scarcely

* *Vide* 'Year Book,' 1867-8, p. 474.
† 'Wien. Med. Wchnschr.,' xix, 43, 1869, and xx, 27, 1870.
‡ Ibid., xxvi, 25, 1870.
§ 'Bäyer Aertzl. Intell. Bl.,' xxiv, 1870.
‖ 'Prag. Vrtljahrsschr.,' iv, p. 240.

a trace of it was found. No increased diuresis was exhibited on either increasing or diminishing the dose of oil of copaiba.

Hyoscyamine.—Dr. E. Thorey* has extracted this alkaloid successfully, and submitted its platinum-salt to analysis. From this he deduces the formula $C_{45}H_{70}N_2O_{10}$ for the alkaloid. He also sets forth the reasons why other experimenters have so often failed to extract hyoscyamine.

Papaverine.—Drs. Leidesdorf and Bresslauer† have arrived at the following conclusions as to the physiological and therapeutical actions of papaverine:—1. Papaverine has an hypnotic action on the human organism. 2. It diminishes the muscular activity, and is useful for this reason in cases of mania. 3. It diminishes with certainty the frequency of the pulse, not only in cases in which this is heightened by muscular exertion, but also in cases of melancholia, where the patient is continually at rest. 4. The sedative action of papaverine is preceded by no stage of excitement. 5. Whether administered subcutaneously or by the mouth, it causes neither nausea, vomiting, dizziness, nor headache; it does not cause constipation, but in many cases the reverse condition. 6. The subcutaneous injection of muriate of papaverine produces no local inconvenience in and about the place of application. 7. The action of papaverine is developed slowly, usually in from four to seven hours after administration, and does not entirely pass off till after the lapse of from twenty-four to forty-eight hours. 8. Papaverine acts in cases where opium and morphia, even in large doses, have proved utterly useless. 9. Habitual use does not speedily cause the drug to lose its effect; consequently, an increase in the dose is not necessary even after long use of the narcotic. 10. Papaverine counteracts excitement, mania, and sleeplessness only as a palliative; upon insanity itself, or upon its causes, it exerts no direct or marked influence. 11. After long-continued use of papaverine the improved state of nutrition observed is assignable to the quietude induced by the employment of the medicament.

Anæsthetics.—Dr. Hermann Köhler,‡ of Halle, contributes a long and interesting article on anæsthetics, in which he gives an elaborate review of all the more recent progress made in this department. The whole question of physiological action, symptoms, results, poisoning, and treatment thereof, is very fully entered into. The article is too long for abstraction.

Veratria.—Dr. Pégaitaz§ concludes from his experiments on the subcutaneous injection of this alkaloid in pneumonia and pleurisy—1. That veratria, administered by hypodermic injection, diminishes pyrexia more rapidly than when taken internally. 2. In other respects the action of veratia is the same, by whatever method it is administered. 3. The pain attending the injection in general forbids its employment hypodermically. 4. The sucbutaneous injection of veratria produces the same results in animals as in man.

* 'Pharm. Ztschr. f. Russ.,' 1869, viii, 6 and 7.
† 'Schmidt's Jahrb.,' 145, p. 276.
‡ Ibid., p. 305. § Ibid., p. 274.

Mr. Charles Bullock,* of Pennsylvania, having completely worked out the chemistry of *veratrum viride*, Dr. Horatio C. Wood,† jun., has investigated physiologically the action of the two alkaloids, one soluble, the other insoluble in ether, contained in that plant. These it is proposed to name in the forthcoming edition of the 'United States Dispensatory' *viridia* and *veratroidia* respectively, and the actions of these alkaloids were compared with those of the veratria of commerce. The results obtained as to the physiological action of viridia are summed up as follows:—1. It appears to be but very slightly, if at all, locally irritant. 2. It has no action whatever upon the alimentary canal, never producing either vomiting or purging. 3. It exerts no direct influence upon the brain, and the pupil is not affected by it, except it be an indirect dilatation just before death. 4. It is a spinal motor depressant (probably directly so), producing death by paralysis of the respiratory nerve centres, and is without action on the muscles or nerves. 5. It is a direct depressant of the circulation, lowering the force and rapidity of the blood streams, slowing the action of the heart, and finally affecting the force of the single beat independently of any spinal action it may exert.

Veratroidia appears to be physiologically as well as chemically in many respects midway between viridia and veratria; locally it is more irritant than the former, less so than the latter. It possesses somewhat similar powers to the former on the heart, although to a less extent, and seems midway between the two alkaloids in its action on the nervous system and muscles, acting chiefly on the spinal centres, but appearing at the same time to impair the conducting power of the nerves and the irritability of the muscles. Its influence on the animal may be summed up as follows:—1. Locally, it is somewhat irritant. 2. It is an irritant emetic, and is sometimes cathartic. 3. It exerts no direct influence upon the brain or upon the pupil. 4. It is a direct spinal motor depressant, producing death by asphyxia, and acting at the same time to some extent upon the conducting nerves and the muscles. 5. It depresses the heart's action both in force and frequency, but the period of depression is followed by one of reaction, its primary cardiac action being independent of its spinal influence.

Previously it had been shown that the so-called resin of veratrum viride has the power of depressing the pulse, but it had been freely conjectured that this resin was really a complex body, containing a distinct alkaloid. This is now known to be the case. After the alkaloid is entirely removed from the resinoid mass there remains, however, a dark substance soluble in alcohol, which appears to be the pure resin of the plant. Experiments showed that this resin has no effect upon the circulation; that it is inert so far as the medical virtues of the plant are concerned; that it has some local action upon the stomach, producing gastric disturbance in the human stomach and violent vomiting in pigeons. The author thinks it more than probable that it is the resin which produces the distressing vomiting often seen when the fluid extract or tincture of veratrum viride has been taken.

* 'Proc. Amer. Pharm. Assoc.,' 1867.

† 'Amer. Journ. of Med. Sc.,' lix, p. 36.

Dr. Wood believes that in the alkaloid viridia and its salts the profession has a remedy by means of which all the peculiar sedative influence of veratrum viride can be obtained, without the horrible nausea and vomiting which always occasion so much discomfort, and which in some instances endanger life. As far as can be judged from the few experiments made upon man, the commencing dose of sulphate of viridia may be set down at the sixth of a grain, repeated every hour, and increased until the desired end has been reached. He has never observed any marked cumulative effect, *i.e.* any very marked increase of the symptoms by small doses of the alkaloid given every hour. The effect of a single moderate dose does not appear to be very long continued, reaching, apparently, its maximum in about an hour. Further experience upon this point is, however, necessary; a study of the action of the medicine in disease alone can settle it. Dr. Wood believes the alkaloid to be pre-eminently safe as compared with other remedies of equal power, *i.e.* it would be much safer to reduce the pulse rapidly twenty beats per minute, and the force of the blood-stream correspondingly with it, than with any other remedy.

If any case of poisoning from it should arise, the treatment should be such as would be suitable were veratrum viride itself the agent. Perfect quiet in the horizontal position; brandy and ammonia freely; opium, or perhaps better still, atropia cautiously; and, on general principles, strychnia.

Haschish.—Drs. B. W. Richardson and Leonard Sedgwick* draw attention to the researches of Dr. Polli, of Milan, on this narcotic—probably the *nepenthes* of Homer. Haschish is fitted for either a pill or a pipe, and is used either as a medicine or a luxury. Its active principle is always derived from the flowering extremities of *Cannabis Indica*, and is not met with in hemps that are indigenous to temperate climates. The name *cannabina*, or *haschishina*, has been assigned to it. Haschish does not represent the pure resin; it is in candle-shaped pieces, three or four inches long and the eighth of an inch in diameter, of an almost black colour. These, when dried, have the characters of an extract. Impure haschish is easily soluble in water, and more soluble in ether, yielding a dark resinous substance, possessing all the properties of cannabina. In this form haschish is either smoked like opium or swallowed with honey or in coffee. Again, haschish is smoked as the simple flower, or an infusion of the seeds and flowers of the plant is taken as we take tea. Lastly, haschish is taken in the form of a spirituous liquid, which is made from the plant whilst in the fresh state. The different modes by which this substance is taken have given rise to a diversity of opinion as to its action on the body; there cannot be a doubt, however, that the symptoms are those of narcotism and intoxication, attended with peculiar psychological occurrences. Dr. Polli, having associated himself with two other experimentalists, found the effects of the extract, when swallowed, to be developed in the course of an hour and a half. The feelings were those of lucidity and elevation, alternating with forgetfulness and melancholy. The alternation, Dr. Polli says, from obscurity to lucidity is like the effect of a sea-wave; a lucid

* 'Trans. St. Andrew's Med. Grad. Assoc.,' 1869, pp. 90 and 98.

wave is followed by a dark overhanging wave, on which the mind is shipwrecked and carried, with the sensation of a melancholy floating towards forgetfulness and oblivion, to be roused instantly by the passage over it once more of the wave of life and light. The dark waves chase each other so long as they continue, and the mind, unable to continue its thoughts and acts, but bending under a successive series of impressions, the shortest space of time seems to present the duration of an eternity. There was another singular condition excited by the narcotic; the influence of the drug showed itself in exciting in the observers, so different themselves ordinarily in general character and temperament—one of them being of a sanguine, another of a nervous, and the third of a lymphatic temperament—a common docility and absence of susceptibility. These effects lasted more than six hours.

Dr. Polli has employed haschish successfully in the treatment of melancholia; and also in hydrophobia, in doses of $7\frac{3}{4}$ grains, repeated every four hours till five doses, or $38\frac{1}{2}$ grains, had been taken. Lemon-juice and the vegetable acids generally are the best antidotes for an overdose of haschish. Tea and coffee heighten its effects.

Convolvulaceæ.—G. Zwicke,* under Köhler's superintendence, has investigated the chemical resemblances and differences of convolulin and jalapin, and ascertained the physiological properties of these active principles. He concludes—1. Convolulin is insoluble, while jalapin is readily soluble in ether; convolvulin is easily soluble in benzole, whilst jalapin is with difficulty soluble in that menstruum. 2. If convolvulin be evaporated on a water-bath with nitric acid, and the residue touched with a drop of strong sulphuric acid, a dirty violet colour is produced. Jalapin, similarly treated, gives a yellow or orange colouration. 3. An alcoholic solution of convolvulin is not precipitated by an alcoholic solution of mercurous nitrate, whilst this reagent gives with an alcoholic solution of jalapin a voluminous precipitate, which is insoluble on boiling. 4. An acid solution of jalapin is precipitated by alkalies, whilst an acid solution of jalapin is not.

Jalap.—Dr. Blacher† describes a ready method of detecting guaiacum resin in the resin of jalap. He puts 50 centigrammes ($7\frac{1}{4}$ grains) of guaiacum resin, and 29 centigrammes (3 grains) of oxide of copper, in a porcelain mortar, and adds about 20 drops of alcohol. When this mixture is triturated, nothing particular is observed, but, as soon as about 15 drops of solution of ammonia are added, a beautiful apple-green colouration is produced. When this experiment is repeated with resin of jalap, no such green colouration is seen, but the mixture retains its brown colour. A mixture of the two resins gives, of course, intermediate results, varying according to the respective amounts of the two resins present.

* 'Schmidt's Jahrb.,' 144, p. 147.

† 'Journ. de Pharm. et de Chimie,' July, 1870.

REPORT ON PUBLIC HEALTH.

BY

THOMAS STEVENSON, M.D.

Influence of marshes on the duration of human life.—M. J. M. Fonssagrives,* of Montpellier, has studied this question by the aid of the numerical method, excluding with great care all disturbing influences which might invalidate his deductions, and arrives at valuable conclusions. He shows that whilst, in France as a whole, the mean age at death is 35·75 years, in the marshes of Hérault, on the Mediterranean coast, it is twenty-three years and a fraction, whilst in the neighbouring non-marshy localities it is 40·8 years. In the marshes of Mireval, Vic, Vendres, Vias, and Manguis, the co-efficient of mortality between the ages of one and ten years of age is 0·508, in the neighbouring districts 0·260, and in France generally 0·312. The mortality of children between the above ages is therefore in those marshes six tenths above the general average of France, and the same excess of mortality is shown to obtain between the ages of 0 and 40. The statistics of other places are brought forward to support the same general conclusion, that the mortality in marshy districts is largely in excess of the average mortality of a country. It is well known that the colder periods of the year are more fatal to children than the warmer; but M. Fonssagrives brings forward the researches of M. Lombard, of Geneva, to prove that the converse holds good for marshy districts, probably on account of the greater prevalence of grave abdominal lesions. Still-born children are shown to be more frequent in marshes than in the country generally, and the fecundity of the female is said to be diminished. Of this, however, there appears to be some doubt. We may also mention that the *physique* of residents in marshes is said by M. Fonssagrives to be inferior; this is shown by the mean height of the conscripts being 57 millimètres (2¼ inches) less than in France as a whole.

Epidemiology.—Dr. Gavin Milroy† contributes an able paper, entitled "Epidemiological Conclusions and Suggestions," the main point of which may be gathered from the concluding words:—"Have epidemic diseases been kept out from countries by any external means of protection or defence?" Dr. Milroy thinks not. This paper, which is well worthy of perusal by those interested in the subject, is unsuited for abstraction. It contains many striking, and not well-known, facts bearing upon the subject of the essay.

* 'Ann. d'Hyg.,' xxxii, 61.

† 'Brit. & For. Med.-Chir. Review,' xlvi, p. 467.

Vaccination.—Mr. George S. Gibb * translates and abridges an imperial report presented to the French Minister of Agriculture by the Imp. Acad. of Medicine, and attempts to show that vaccination causes an increase in the amount of fatality of smallpox. He says—"In the summary of averages, the figures for the two sets of ten departments, and for the two portions of the whole country, are brought into juxtaposition to facilitate comparison. The reading is—for every 88 cases of smallpox occurring in the ten departments least vaccinated, there occurred 427 in the ten most vaccinated; for every 83 cases ocurring in the twenty-three departments least vaccinated, there occurred 254 in the fifty-four most vaccinated. Smallpox deaths: for every one occurring in the ten departments least vaccinated there occurred 49 in the ten most vaccinated; for every 8 occurring in the twenty-three departments least vaccinated there occurred 28 in the fifty-four most vaccinated. Proportion of smallpox deaths to smallpox cases—out of every thousand cases occurring in the ten departments least vaccinated there died 97; out of every thousand cases occurring in the ten most vaccinated there died 116; out of every thousand cases occurring in the twenty-three departments least vaccinated there died 92; out of every thousand cases occurring in the fifty-four departments most vaccinated there died 106." But do the statistics given by Mr. Gibb disprove the beneficial results of vaccination? No information is given as to the former sanitary condition of the departments referred to, and it is not shown whether smallpox had increased or decreased in them during the last few years. In order to establish the proposition that the number of cases stood in a direct relation to the number of vaccinations, it should be shown, as an able critic † justly observes, that such a condition of things prevailed generally throughout all the departments of France. But this is not done. We find, however, that in several of the "most vaccinated" departments there were few or no cases of smallpox; while, on the other hand, in several of the "least vaccinated" departments there were large proportions of smallpox attacks to births. Dr. Cameron shows what a very different interpretation Mr. Gibb's readings may be made to bear, and that there is nothing in this gentleman's pamphlet which should lead us to modify the opinion generally entertained relative to the value of vaccination as a prophylactic agent.

Mr. Simon enters ‡ into an elaborate account of the recent improvements in English vaccination, and into a defence of the practice against the attacks of those who allege that vaccination communicates syphilis. He also enters into the question of animal vaccination, and its alleged superiority to vaccination from arm to arm, and says that facts stated in Dr. Seaton's report show most clearly that the system, as at present understood, has certain disadvantages; and these, in Mr. Simon's opinion, are of such a kind as at present entirely to forbid an adoption of the system in place of our own, unless on independent grounds our own already deserved to be condemned. The disadvantages at present imputable to animal vaccination are its various peculiar liabilities to

* 'Report,' &c., trans. and abridged by Geo. S. Gibb. Longmans, 1870.

† Dr. Cameron, 'Dubl. Quart. Journ.,' l, p. 427.

‡ 'Twelfth Rep. of Med. Off. of Privy Council,' p. 36.

failure:—first, that apparently even able and painstaking operators may find it impossible to transmit successive vaccination from calf to calf without very frequent recurrence of failures and interruptions; secondly, that the transference of infection from the calf to the human subject, even under the most favorable circumstances (*i. e.* by experienced operators and with lancet direct from calf to arm), has in it such risks of failure that, for instance, at Rotterdam, the proportion of unsuccess was nearly twenty times as great as in the ordinary arm-to-arm vaccinations; and thirdly, that the calf-lymph, as compared with ordinary lymph, is peculiarly apt to spoil with keeping, and in the form of tube-preserved lymph can so little be relied on that the Rotterdam establishment, in distributing supplies of lymph, now uses only lymph from the human subject. Evidently, then, in the present state of knowledge, a system of animal vaccination would have in it an extreme uncertainty of operation; and this uncertainty would, for obvious reasons, be so conclusive against our preferring the system on its own merits for purposes of public vaccination, that practically we have only to consider whether our own system has demerits entitling it to any considerable mistrust. After reviewing the recent improvements in the English system of public vaccination, he adds, that considering all these improvements made within the last dozen years in the arrangements of public vaccination in England, and considering especially their bearing on the quality of the vaccination, both as regards the probable efficiency and care of the vaccinator, and as regards the local arrangements which affect his selection of lymph, and if in 1857 he (Mr. Simon) was able to show that vaccination, as till then administered in England, had not deserved the imputation that it served as a means of communicating syphilis, he anticipates that, in the present immensely improved state of the case, no such imputation will be deemed warantable. The very interesting report of Dr. Seaton on so-called animal vaccination in France, Belgium, and Holland, is appended.*

Perhaps the most conclusive paper as to the non-foundation of the imputation of the transmission of syphilis by means of vaccination is that of Dr. Anstie,† in which he takes up the ground, that not only is there no proof of such transmission having occurred, but there are grounds for philosophic disbelief as to the possibility of syphilis being so communicated.

The prevailing epidemic of smallpox renders the vaccination question at present one of more than ordinary interest.

Cholera.

Dr. Bryden concludes his report on the cholera of 1868, in the Bengal Presidency, in the following words:—"I wish to repeat the caution which I gave at the commencement of this paper—that, clear as the laws appear to be, and perfect as the parallels seem, the demonstrations from the history of this period are but a small contribution

* Ibid., p. 171.

† 'The Practitioner,' iii, pp. 229, 289.

towards the perfection of a system; they are given as the commencement of a study to be pursued in a certain direction, which it will take many years of research to elaborate. I would not have it concluded—when on any occasion in the future the parallels may not have fallen exactly as I have described them to occur during the present period—that the deductions from the facts as I have stated them are incorrect. Parallels do not fall except by the intervention of natural agencies, and it is these agencies which are to be studied, as well as the part played before us by the object cholera. I do not insist upon the absolute stability of parallels, but upon the truth that epidemic cholera shall play its part, side by side, with natural agencies; and if at any time it may appear that the order of things is broken, I think we shall do well if we mistrust our judgment and try to read the facts over again, under the conviction that it is far more likely that our data are deficient, or our appreciation of them wrong, than that the subordination of the epidemic cholera to natural laws has been removed. We have found the same truth persistent throughout this inquiry, not that the epidemic had a certain geography, a certain course, and a definite date of appearance, in virtue of the fact that it was an invading epidemic, but we have found one and all of the manifestations of epidemics to vary precisely as they ought to have varied, to have been deferred and to have been accelerated, to have been repelled and to have been urged forward, to have left certain areas unoccupied and to have occupied others, under the guidance and control of an unerring agency. It is true that we shall for a long time to come recognise truths regarding cholera as an epidemic during or after the occurrence of the events as in anticipation of them, but the time may come when the anticipation of events will be the rule, and failure to anticipate them the exception. The stability of the standard here attempted rests on the truth of the three assertions—that the cholera provinces are the natural provinces of this presidency, and will remain so in all time to come; that cholera has a distinct existence as an organised object, in subordination to which the phenomena of reproduction, dormancy, and final decay occur; and that the control of vital manifestations and also of epidemic progress is exercised by the meteorological agencies prevailing within geographical areas, which in this presidency we can clearly recognise and define, but which for countries beyond Hindostan have yet to be framed. It is the special physical geography of Hindostan, the perfection of the regularity with which the seasons come forward year after year, and the normality of the limit of meteorological agencies in every year, that causes its surface to become mapped out into natural areas. Limits there are of natural areas within the geographical limits of our presidency, but its geographical boundaries are not the limits of the spread of aërial influences. The western limit to the province covered when our spring cholera is thrown over Eastern Africa, or the eastern limit of the air-borne cholera progressing beyond our north-eastern frontier, has never yet been defined; and I have shown that Persia is only a halting stage in the first year of their career for the epidemics of our north-western provinces traversing the northern epidemic highway leading out of the Bengal Presidency towards the west.

"The history of cholera as an epidemic within the endemic area has yet to be written. The immediate channels through which it emanates require still to be traced with care; our knowledge is entirely deficient as to whether one breeding area supplies the pabulum for one geographical distribution of invading cholera, and another for another, and as to whether exhaustion follows the throwing off an epidemic swarm in those localities from which we have reason to infer that it has issued. That cholera has a distinct provincial history as an epidemic, over and above the fact of its reproduction and decay in each year in relation to the endemic area, is certain. I know of no inquiry of greater importance than that which shall teach us whether absolute prevalence over certain divisions of the endemic area is invariably the prelude to epidemic advance beyond the boundary limits, and whether the materies of an epidemic destined for invasion is accumulated from the year of the throwing off of the one swarm up to the date of the exit of the swarm succeeding. Minor emanations do probably occur during those intervals, and these, no doubt, contribute to the perpetuations from year to year of the cholera, which I have shown to exist in the shaded tract lying immediately beyond endemic limits. But the entire series of facts treated of in the first section teaches that there is held in reserve, over and above the cholera of such casual emanations, a body of material sufficient, after the multiplication of a very few years, to constitute the material of the widest spreading epidemic."

Pettenkofer* has given us a most able *résumé* of his writings on cholera, and has published his latest views on the origin and spread of this disease. The paper is so important, and his peculiar views appear to be so little known to English readers, that we translate the summary of his conclusions almost in their entirety.

General conclusions concerning the origin and spread of cholera.—(1) Cholera has its origin in a specific infective substance, which certain regions of India have produced for several centuries, as can be demonstrated historically. (2) In India cholera does not develope to the same extent in every year, nor in every region, nor in every season. There are regions where it is endemic, like enteric fever and ague in many parts of Europe, and where, like these diseases, it is at times developed into considerable epidemics. In most parts of India cholera cannot be said to be endemic, for it dies out and reappears as an epidemic after long intervals, intercourse with places where the disease is raging giving rise, as in Europe, to these reappearances. (3) The facts of the local and seasonal frequency and spread of cholera in India, as well as its extension beyond the frontier, warrant, and even demand, the hypothesis, not only of the existence of a specific germ or infective matter communicable by contagion, but also of an actual determinative local and periodical substratum, without which the specific cholera germ cannot produce cholera in the human subject, since this disease appears to be caused only by a specific product of a fermentation between the cholera germ and the cholera substratum. (4) We may indicate the specific germ by the symbol x, the local and seasonal substratum by y, and the product generated from these—the peculiar cholera poison—by

* 'Ztschr. f. Biologie,' v, p. 1.

z. (5) Neither x nor y alone can produce cases of cholera; it is only z that can do this. (6) The specific nature or quality of z will be determined by the specific germ x, and the mass or quantity of z by the mass of the substratum y. (7) The nature of x, y, and z is as yet unknown; but we may accept it as a scientific probability, bordering on certainty, that all three are of an organic nature, and that x at least is an organic germ or body. The discovery of the polymorphism of the lower forms of life points out the general manner in which researches into the cholera process must be conducted. A sure foundation for the investigation will be obtained most readily if several values of y can be deduced from investigations of local and seasonal peculiarities, more especially of those relating to organic metamorphoses and processes, in various strata and at varying depths, in different soils at varying seasons. (8) In those parts of India where cholera is endemic it must be supposed that z is present in various quantities at different seasons, so that at one time the unvarying cholera germ (x) may give rise to little or no sickness, and then, again, in such quantity that an epidemic-spreading poison results. The presence of x being presupposed, the mass of z depends, in the first place, on the amount of y, and the quantity of y on the local and seasonal peculiarities of the soil. (9) The facts quite permit the assumption that x may be nurtured for some time in the human body, *e. g.* the intestines, and that it may, perhaps, there undergo a considerable augmentation in quantity; but in a case of cholera the human body is the field of action of z only, and can of itself, without the contact betwixt y and x, never produce z. (10) Substances may gain access into the human organism, even from great depths in the earth, in two ways—through the water in the soil and through the air in the soil. The latter mode appears to obtain in cholera. (11) Whilst x, y, and z appear to be communicable from one place to another, even to great distances, not through the air, but by human intercourse in a totally different manner, x of itself, when imported into a house or other place, cannot produce the disease in man; but in proportion as it is present and z becomes developed can z produce cholera. A certain amount of z imported into a locality may also, without the presence of y, produce cholera locally in those individually predisposed, these cases being the produce of the y of another locality, which was necessary for the generation of the z which was imported. Commerce seems to be the most active agent in the spread of x, probably, in general, by means of the excreta, in which, however, there is, with much probability, scarcely ever so much fertile cholera poison (z) as to generate cases of cholera. When z is disseminated by intercourse, this invariably depends mainly on the introduction of the germ x. Z and x appear to accumulate in greatest quantity, to best keep their peculiar qualities, and to be most easily transported to great distances, in damp linen sullied by choleraic diarrhœa; and, according to present experience, they retain their infective properties, without y, for a period of twenty-one days. (12) The first extension of cholera beyond the frontiers of India towards Europe coincides with the first twenty years of the present century, and with commencement of a great acceleration of, and increase in, human intercourse by sea. The first

steam-vessel appeared in Indian waters in 1826. The disease has never found its way from India into Europe by way of the Cape of Good Hope, but invariably by land through Western Asia and Europe. (13) Ships at sea behave like places on land that enjoy immunity, in so far as they never produce any *y*; they serve, nevertheless, according to present research, for the spread of *x* and *y* from one port to another, if after they have left an infected harbour they do not remain longer than twenty-one days at sea away from all communication with land. Cases of cholera occurring on shipboard are usually caused by a previous reception of *x* and *y*, or *z*, on land, although isolated cases may and actually do result from this, that ripe cholera poison (*z*) has been brought in a certain quantity and state of concentration from land on board ship. The case is even conceivable that *x* and *y* have been brought on board at the same time, and that there, simultaneously meeting for the first time, give rise to *z*; but *y* is always generated by the soil, or land, and never from the human body. In future a more exact study of the spread of cholera on shipboard than has heretofore been made is imperatively necessary. (14) As regards the spread of cholera on land, it may be assumed that the germ *x* requires the same substratum here as in India, and that the origin of epidemics is dependent upon local and seasonal favouring circumstances. (15) There are regions, localities, and places, some of which frequently, others very rarely, and, again, others never, become the home of cholera, even when commerce continually and everywhere brings in a like quantity of cholera germs. In the places which enjoy this immunity either *y* is wanting, or *y* is appropriated and laid hold of by other germs than *x* for other processes, or by some other influence going on at the same time the production of *z* is prevented. (16) The formation of *y* is favoured by (*a*) a soil which, like alluvial earth, is porous to water and air to a depth of several feet; (*b*) a more than ordinary temporary fluctuation in the ground-water; (*c*) the presence of such organic and mineral matters in this porous stratum as can be acted upon by water so as to produce *y*; (*d*) such a temperature of the soil as favours this organic process. (17) The place where *x* and *y* meet, and, consequently, where *z* is developed, may be one of several; *x* and *y* may come together in the soil itself, as many Indian cholera fields show; perhaps also in a house, and even in the human body. The action of *z* may thus proceed from various places. (18) The degree of activity of *z* in producing sickness depends essentially upon the quantity of *z*, and upon a certain state of the body—the individual disposition. In forming a judgment as to the incontestible influence of poverty, want of cleanliness, bad or improper food, impure drinking-water, bad overcrowded dwellings, absence of change of air, mental affections, age, &c., upon the prevalence and fatality of cholera in a locality, we must distinguish how far these conditions act upon the development, the progress, or the accumulation and conservation of *x*, *y*, and *z*, or upon the establishment of the individual disposition. In general the individual predisposition appears to be favoured by whatever produces, either permanently or temporarily, a diminution of albumen, *i. e.* a relatively greater proportion of water in the organism. The simple importation of *x* into a place, and the presence of persons

with the individual predisposition, cannot produce cases of cholera so long as *y* and *z* are absent, or are present in too small quantity. (19) In cholera statistics the single case and the single dwelling form the factors. In each place we must investigate, and as far as possible establish, whether the appearance and spread of cholera should be designated epidemic or sporadic, *i. e.* whether *z* has arisen from *y* in the locality or in a part of it, or whether the cases originate from *z* produced in another locality. (20) In its epidemic extension cholera has always shown an especial preference for alluvial soil and for low-lying river and drainage districts, whilst it has appeared only rarely as a local epidemic, and exceptionally in mountainous districts and near watersheds. (21) Although the part which commerce has played in spreading cholera is so important and necessary, epidemically infected places have never extended themselves, as a rule, along the lines of railway, but have grouped themselves in quite another manner, probably in consequence of the unequal local and seasonal division and distribution of *y*. (22) All localities and places that have been attacked by an epidemic of cholera, even those situated on the hills, are built on porous soil, readily permeable by water and air, such as alluvial earth. Wherever places are built upon a compact stone, impermeable or only very slightly permeable to air and water, there no cholera or only isolated cases of the disease have been observed, and never an epidemic. Superficial observations alone have furnished apparently opposite results. The cohesiveness of a soil must not be confounded with its porosity. There are rocks so exceedingly firm as to be employed for building-stone, yet so porous that, in the dry state, one third of their volume is taken up by air. The degree of porosity of different kinds of soil must be determined. The porous strata in each locality where we wish to investigate cholera ought to be investigated in their extent and connection from the surface to the first water-bearing stratum, and as to their capacity for retaining and permitting water to pass through them. (23) In every country or district certain portions and places are seized early, and others later or not at all, without our being able to explain this difference by the varying periods at which the germ was imported, or by reference to individual predisposition. (24) The very dissimilar behaviour of neighbouring, and often closely adjacent, localities and places towards cholera, indicates most certainly that the state of and changes in the atmosphere, which always extend themselves more equably over large tracts of country than cholera itself, cannot possibly of themselves have any other influence than as predisposing causes; and that, much more, the state of and changes in the atmosphere are only so far concerned in the production of the cholera-poison that they act upon a peculiarly adapted soil, and thus favour the formation of *y*. (25) The extension of local epidemics in districts has invariably indicated that, along with the presence of the cholera-germ, no circumstance exerts a greater influence upon the "grouped" and simultaneous appearance of the epidemic in several places than the position of these in similar river and drainage districts. These facts have led to a knowledge of the influence of the relations of ground-water, which, the presence of the germ and the peculiar condition of the soil being given,

are to be considered as the essential and hitherto unknown seasonal *momenta*. Certain changes in the state of the ground-water have shown themselves to form an essential seasonal *moment*, not only for cholera, but also for other epidemic and endemic diseases, as *e. g.* enteric fever. (26) So far as the appearance of cholera has been exactly observed in India, where it is endemic, no circumstance, even remote, has there exerted upon its seasonal frequency so regular and definite an action as differences in the humidity of the soil; so that in Calcutta, in the hot and moist season of the year at the end of the rainy season, cholera appeared to the least extent, just as in the hot and dry season the disease was most abundant. The minimum of cholera in August there bore to the maximum in April, in twenty-six years, the proportion of six to one. (27) Absolute or constant dryness of the soil, as, for example, in the desert, is as unfavorable to the cholera-generating process as absolute or constant wetness. But along with a certain medium proportion of water in the soil as a condition most conducive to the springing up of an epidemic, facts most certainly indicate the necessity of a great variation (fall) of water in the soil; which variation, when associated with a certain temperature of the earth and stability of the organic and inorganic substances contained in it, may act like alternate dampness and dryness upon putrefaction and eremacausis. Three alternatives are here presented—there may be places where, and times when, the humidity of the soil is too great, or too little, or too uniform, to preserve all the local conditions necessary for the development of an epidemic (*i. e.* a sufficiency of *y*). (28) When the interspaces of a porous soil are filled partly with air and partly with water, we call the soil *moist;* when the pores are completely filled with water, and the air expelled, a soil is said to possess *ground-water*. The ground-water must not be regarded simply as a constant source of moisture to the superjacent porous strata, but the changes in its condition form a certain starting-point (a zero-mark) for the moistening of the soil. To note the rise and fall of this saturation-point is a datum for measurement of the ground-water. In every place the rhythmical movements of the ground-water should be noted at intervals of fourteen days. (29) The local level and the extent of the movements in the ground-water depend essentially on five momenta—(*a*) on the rain-fall in that locality and place; (*b*) on the quantity of rain penetrating the soil, or flowing off from its surface; (*c*) on the quantity of rain which, penetrating into the soil, is retained by the more or less dry, more or less retentive strata, or is again evaporated; (*d*) on the quantity of ground-water that flows from the higher altitudes down to the impermeable strata; and (*e*) on the inclination which the impermeable stratum beneath the ground-water has. As a rule, in fluviatile valleys the level of the ground-water lies higher than the level of the streams; in cases where it is otherwise it proceeds from permeability of the river-bank to water whether the level of the ground-water shall depend most upon the stream or most upon the land. (30) Usually in alluvial soils the fluctuations in the humidity from the surface down to the first impermeable stratum are most easily and surely measured by the varying level of water in wells, if no water-collecting strata be interposed

between the surface of the soil and the surface of the water in the well. Where the ground-water in the upper porous strata is not constant, or where, on other grounds, the level of the water in wells cannot be considered as a measure of the variation in the humidity of the superjacent strata, the use of wells for observations on ground-water is not permissible, and other methods must be employed for the purpose. (31) Epidemics of cholera have at times spread from the Tropics to the Arctic Circle. If the disease is connected in its epidemic spread in any known mode with organic processes going on in the soil, the temperature of the soil and its continual movements cannot be indifferent; hence constant observations ought to be made on the temperature of the soil in various regions. Most epidemics have appeared with us at one period of the year, late in summer and autumn, after the temperature of the soil has attained its maximum. We do not as yet know at what depth below the surface the prescribed processes go on; but we know that below zero (32° F.) all the vegetative and fermentative processes known to us with which the hypothetical cholera-processes can be most nearly compared are usually arrested. But since cholera has appeared in the far north (St. Petersburg), exceptionally even as a winter epidemic, where the soil is frozen to the depth of several feet, so must that part of the process which furnishes the local and seasonal substratum for the epidemic (y) be still possible in the houses situated on this soil, and in immediate connection with it, even below the frost line. The fact of the local and seasonal dispositions often first manifesting themselves at an advanced period of the year cannot be accepted as a refutation of the favouring influence of a high temperature, but only as an instance of late maturation in consequence of preceding hindrances to development. In those parts of St. Petersburg in which cholera has prevailed epidemically early in winter it has constantly happened that the ground beneath the houses has not been frozen, whilst sometimes also in winter water (ground-water) has been found in the cellars, whilst the general surface of the ground was frozen hard. Frozen humid soil is, indeed, less porous than unfrozen soil, but it is, nevertheless, still permeable. In St. Petersburg the greater the difference in winter between the temperature of the air indoors and of that outside the greater must be the force of the ascentional current of air in the houses, and hence, as has been observed, the greater the care with which external air is excluded the greater the quantity of air drawn up through the porous soil.

Prof. Pettenkofer next makes some observations on the immunity of Lyons from cholera, and says—(1) The striking immunity of Lyons from cholera cannot be explained by the non-importation of the specific germ x. This immunity has been preserved ever since the year 1831. (2) It cannot be supposed that the inhabitants of Lyons have not the individual predisposition to cholera. (3) This immunity cannot be explained by the currents of air caused by the union of the streams of the Rhone and the Saône, since these are not greater than those experienced in other towns which have suffered severely from the disease. (4) The meteorological conditions of Lyons do not enable us to recognise any cause for the difference, in respect of cholera, observed between this

and other large towns that have suffered from epidemics of this disease. (5) Neither the architecture of the houses, their proximity, the situation of the privies and closets, the method of removing the excreta, nor the plan of sewering, in the least explains the immunity. (6) Just as little can this be deduced from the provision of the town with drinking-water, which, until 1858, was very defective. (7) The immunity may be partly explained by the influence of the soil, but this will not apply to that part of the city which is built directly upon compact rock, granite, or the loam overlying this. (8) Those parts of Lyons which lie upon fluviatile soil owe their immunity to the peculiar state of the ground-water, a state which is unfavorable to the production of *y*. (9) The ground-water of these parts of the city does not lie above the level of the stream, as is commonly the case, and as it is observed to do in Paris, Munich, and many other cities, but it lies at a lower level, and its level is, through the imperviousness of the river bank, determined almost exclusively by the level of the Rhone. (10) A considerable portion of the waters of the Rhone and of the Saône tunnels through the exceedingly porous soil of the town; and from this peculiarity, not only does the rain falling there, but also a great part of that falling in remote regions, act constantly upon the soil of Lyons, and renders it too humid, or too little liable to fluctuations in its state of humectation, to be effective in producing cholera epidemics. (11) In the summer and autumn of 1854, when this state of things had changed essentially in consequence of the Rhone maintaining for six months the lowest level observed for forty years, certain parts of the city, which till then had invariably enjoyed immunity, in consequence of their relations to ground-water, were indubitably, though slightly, affected with an epidemic of cholera. Other quarters of the city, in consequence of their different conditions of soil, still retained their immunity. (12) The year 1854 thus indicated the level below which the waters of the Rhone (and consequently the level of the ground-water in Lyons) cannot fall without that portion of the city lying upon fluviatile deposits becoming liable to epidemics of cholera. These conditions of soil and ground-water are not met with in the other large towns of the south of France.

Relapsing Fever.

In the winter of 1869-70 England, and more especially the metropolis, was visited with an epidemic of relapsing or famine fever, a disease not observed in this country since the time of the potato famine. Happily the disease was met with some amount of energy, and soon disappeared. In one respect relapsing fever had an unsatisfactory result: but little was added to our knowledge of this disease. A note by Mr. Simon,* the Medical Officer of the Privy Council, states the means taken to stay the progress of the malady.

Scarlet Fever.

During the past two years scarlet fever has committed the direst

* 'Twelfth Report,' pp. 7, 65.

ravages in this country. The lamentable history of this disease only serves to show how helpless sanitary authorities seem to be in coping with it, and the need of a thorough reform in our sanitary legislation. The following important document* was published:

"*Memorandum by the Medical Officers of Health of the Metropolis on the Measures necessary for arresting the spread of Scarlet Fever.*

"The Registrar-General, in his Weekly Return for Sept. 25, 1869, whilst enumerating the deaths from scarlet fever, says that 'the Medical Officers of Health will no doubt endeavour to suggest some practical means of preventing its further extension.'

"The Association of Medical Officers of Health beg, in reply, to forward to the Registrar-General the following memorandum:

"It is quite possible to check scarlet fever, if adequate means be taken to destroy the emanations of the sick, so that they shall not infect the healthy. For this purpose the sick must be separated, either by putting them into rooms apart, or by sending them out to a sick house, or, which is better, by removing the healthy to another house. The infecting matter of the disease resides in the excretions of the mouth, throat, and lungs, of the bowels and kidneys, of the skin, and of the suppurating surfaces common towards the close of the disease. Disinfection should be applied assiduously to the mouth, nose, and throat, as each case may require, by gargling, swabbing, or syringing with a teaspoonful of Condy's Fluid to a pint of water; the excreta of the bowels and kidneys should be well dosed with strong carbolic acid before they leave the bedside; the air of the sick room should be occasionally freshened by dispersing Condy's Fluid (diluted as above) by means of a vaporizer; and the doorway should be hung with a sheet well sprinkled with carbolic acid, so that there may be no mixing of tainted air with that of the body of the house. It can do no harm to oil the skin during the height of the fever, but what is of real consequence is the persevering use of warm soapy baths so soon as the patient can take them, and through the convalescence till the skin has done peeling and the throat and nose are healed. All handkerchiefs, towels, and linen, before leaving the room, should be steeped in boiling water containing a teaspoonful of solution of chloride of soda, or of Condy's liquid, to a pint; and when the disease is over, the bedding and clothing of the patient and his attendants, all floors, walls, and ceilings, and the surface of all furniture on which infectious matters may have settled, should be scraped, or cleaned with a disinfectant, and fumigated. Moreover, disinfecting fluids (as carbolic acid) should be poured freely, after the slops from the sick room, into the closets, sinks, drains, and sewers, and into every place around the house where decaying organic matter can be harboured.

"The persons attending on the sick should wear glazed or smooth dresses by preference; they should often wash their hands, especially before eating, and should mix as little as possible with the family.

"For fumigating infected rooms and their contents nothing is better

* 'Registrar-Gen.'s Weekly Return' for Nov. 6, 1869, p. 383.

than sulphur. A quarter of a pound of brimstone, broken into small pieces, should be put into an iron dish (or the lid of an iron saucepan turned upside down), supported by a pair of tongs over a bucket of water. The chimney and other openings are then closed with paper pasted on, and a shovelful of live coals is put upon the brimstone. The door is then quickly shut, the crevices covered with paper and paste, and the room kept closed for five or six hours. After this, a thorough cleansing should be effected; everything washable should be washed, and all other things be cleansed by proper means.

"Fumigation of clothes, &c., may be easily carried out on a small scale by burning a sufficient quantity of brimstone matches.

"Provided there be no unsuspected drain, sewer, gulley, watercloset, pipe, or cistern, or other source whence the inmates receive fresh infection, scarlet fever can be and is daily arrested in private houses by the above means carried out in detail; but only by persons having space, wealth, intelligence, and the wish to save life. It is far otherwise in the crowded houses of the poor, where the healthy are mixed with the sick, and even with the dead.

"Public hygienic measures are then necessary, and the following are the measures which the Medical Officers of Health recommend:

"*Measures of Public Hygiene, and the present Impediments to their Adoption.*

"1. Information should be diffused through *every family* by printed bills as to the contagiousness of scarlet fever, and the mode of preventing it. Expense has hitherto prevented the adoption of this measure.

"2. Every case of scarlet fever, and especially every first case, should be immediately reported to the sanitary authority. At present this is not done. There is no provision by which cases of infectious disease, even in poor-law and public practice, shall be made known to the Medical Officers of Health. In some districts, by an act of courtesy, information is forwarded, at more or less prolonged intervals, and so, usually, at a late period of the illness. It is only when death occurs that the Health Officers with certainty hear of the occurrence, and by that time (often a week or ten days after death) the contagion may have spread more or less extensively. They never hear officially of private cases; it is held to be the interest of all parties to conceal their occurrence. Without early and ample information, it is impossible to put in force the provisions of the Sanitary Act directing the disinfection of houses, &c., and forbidding the exposure of disinfected persons and articles.

"3. Every case so reported should be immediately visited by the Medical Officer of Health or his skilled assistant, who should see that all proper precautions are in operation. But even with full and early information, adequate precautions could only be superintended by the devotion of all the time of the Health Officer to public work, for which the sanitary authorities have made no provision, and by the aid of a staff of assistants such as was given to few of them even during the cholera epidemic.

"4. The streets and courts, and the yards of infected houses, should

be watered with a disinfectant solution, such as carbolic acid. Such a proposal could not be made to a metropolitan vestry with any chance of compliance. The expense and the dread of panic would be obstacles. This proceeding has hitherto, therefore, been limited to severely infected streets and courts.

"5. Public day and Sunday schools in an infected district should be authoritatively closed. The out-patient rooms of hospitals and dispensaries are even more dangerous than schools. *It should be a punishable offence to send a child to any day school, public or private, from a house or family in which fever exists.* There is, however, no power or authority for this.

"6. Sufficient hospital accommodation should be provided for the poor, with arrangements at each hospital for the disinfection of the person and clothing of the patient on his discharge. No sufficient hospital accommodation as yet exists.

"7. Where it appears to the Medical Officer of Health necessary that the sick person should be removed, he should be able to enforce the removal, certainly in any case where the sick is under no medical care, or is being treated at the public expense. Very limited powers of this kind are at present conferred by the 26th section of the Sanitary Act, 1866, and these are only applicable after considerable dangerous delay. This section is practically useless.

"8. An appropriate carriage should be provided in every district for the conveyance of the sick to the hospital. At present public cabs are still largely used, because few local authorities in London have provided appropriate carriages, as they are empowered to do by the 24th section of the Sanitary Act, and sometimes because the sick refuse to use them.

"9. The Sanitary Act (sections 24 and 38), as it relates to the use of and disinfection of public carriages for the conveyance of persons with infectious diseases, should be enforced; this is not done.

"10. There should be in every district one or more proper mortuary houses for the reception of the dead of any class of society, and removal thereto should be capable of being enforced where necessary. There are many of the districts of the metropolis in which the local sanitary authorities have not yet provided the mortuary house, which they are empowered to provide by the 27th section of the Sanitary Act; even where it has been provided, the limitations imposed by that section render the statute practically valueless. In all cases a packet of Macdougal's or of Calvert's disinfecting powder should be strewed over the body before the coffin-lid is screwed down, which should be done as quickly as possible.

"11. The sanitary authorities should provide such a staff of assistants or labourers, and such appliances as may be necessary to carry out the disinfection of houses, clothing, bedding, &c., where people are too poor or ignorant to be trusted with the work, and also proper means of destroying certain things by fire. The 23rd section of the Sanitary Act, empowering local authorities to provide means of disinfection, has, it is believed, up to the present moment been entirely ignored in the metropolis, not even a 'proper place' having been provided where dis-

infection may be carried out. Houses are often now very inefficiently disinfected for the lack of a proper staff of persons to carry out the work.

"12. There should be arrangements by which articles of clothing, bedding, &c., destroyed by order of the Medical Officers of Health, may either be replaced or paid for. At times when the 'Diseases Prevention Act' is not in operation by order of the Privy Council no such arrangement can be made.

"13. During the disinfection of a house or apartment, or when the sick person cannot be removed, it is necessary to remove the healthy; for this there should be one or more houses of refuge provided, in which poor families may be temporarily lodged, and with means of disinfecting the persons and clothing of those removed. A house of refuge is a thing at the present time utterly unknown to the sanitary arrangements of the metropolis.

"14. The 'Diseases Prevention Act' should be put into operation by order of the Privy Council on any severe outbreak of scarlet fever in London, or at times when, from season or cyclical period, it is probable that the disease will spread extensively. Practically, this otherwise invaluable Act is a dead letter, except on certain occasions when an unusual disease prevails in the country, such as an epidemic of cholera.

"15. The services of public nurses to superintend the administration of nourishment and medicine, and the disinfection of discharges, would be invaluable. One bad case of scarlet fever furnishes quite occupation enough for one woman.

"16. The Medical Officers of Health desire to put in force the lodging-house clauses of the Sanitary Act, 1866, sect. 35, which, by restricting the number of inmates, and by enforcing periodic cleansing of the homes of the poor, might in some degree limit zymotic disease."

Diarrhœa.

Dr. Crewe,* of Leicester, contends that diarrhœa is not a true zymotic disease, and hence that it is not a preventible disease, in the ordinary sense of that term.

Typhus Fever.

Dr. J. B. Russell† gives a number of interesting facts illustrative of the propagation of this disease, from which he concludes—(1) That where attention is paid to personal and general cleanliness typhus does not carry far, so to speak, through the atmosphere, and is not portable; (2) close approach to, and contact with, the infected individual and his dirty belongings lead with great certainty, even under the best sanitary circumstances, and in healthy and well-fed people, to an attack at the end of about four weeks in the majority of cases, but not in a few until the lapse even of some months; (3) that individual insusceptibility does not exist, except that which is conferred by a previous attack. He adds:—"As an interesting contrast with our experience of typhus, I may say that no case of enteric fever has ever arisen, either among the staff

* 'Rep. on the Sanitary Condition of Leicester for 1869.' Pamphlet

† 'Rep. of the Glasgow Fever Hosp.,' 1870. Pamphlet.

or among the patients beside whom cases of enteric fever are treated. These latter have, however, in a very few cases caught typhus.

Enteric Fever.

Prof. Pettenkofer* lays down the following propositions concerning the influence of ground-water† on the frequency of enteric fever in Munich:—(1) The actual movement of typhoid mortality in Munich requires the hypothesis of an accessory cause, which at one time hinders and at another favours the development of the specific cause of enteric fever, and that must be regarded as the quantitative side of this—the ground of the in- and ex-tension, the ground of the sporadic appearance of typhoid. (2) In Munich, of all the momenta accessible for the investigation, the oscillations in the ground-water best show an unmistakable connection with the intensity and extension of typhoid. (3) So long as the ground-water steadily rises, the number of deaths from typhoid steadily diminishes; but when the former is falling, the latter increases. (4) The extent and duration of the one or the other movement furnishes a measure of the intensity and extension of typhoid. (5) The fluctuations in the number of cases of typhoid compared with the fluctuations in the ground-water, after elimination of the yearly periods, enable us to recognise a coincidence showing, with a probability of 36,000 to 1, that there is a constant connection between the two phenomena. (6) Further, all investigations show that, in Munich, in a month in which there happens to be an excessive rain-fall, there is a decidedly greater probability of a decrease in the typhoid cases below the average than an increase, and *vice versâ* in a dry month. (7) Whilst the rain-fall of a month exerts an indisputable influence upon the typhoid cases occurring in the subsequent months, collation of the typhoid cases of one month with the rain-fall of the succeeding month no longer exhibits the slightest connection between the two. (8) If we consider that two independent investigations, the one into the ground-water, the other into the rain-fall, agree in this, that they do not enable us to perceive a beneficial action in increased rain-fall, and that the latter investigation, especially, embraces several independent calculations all leading to the same conclusion—mere coincidence being thus eliminated—we are compelled to accept the hypothesis that there is some sort of physical connection between the events under consideration, although the nature of this connection is as yet unknown. (9) Should it be imagined that the two events do not depend upon each other, but upon a third and unknown factor, we must suppose in the cases in question that the height of the ground-water, the amount of rain-fall, and the frequency of enteric fever, are governed by this hypothetical unknown factor, and are in accord with it; then, since this unknown thing cannot be the season of the year, for this would be eliminated in every extended series of statistics, so can no other probable explanation of the facts be advanced other than that the local relations of the water contained in the soil of Munich, when present in sufficient quantity, prevents or limits the course of certain processes

* 'Ztschr. f. Biologie,' v, p. 136.

† *Vide* this Report, p. 493.

which determine the prevalence of typhoid. (10) It is most natural to regard these processes as going on in the soil; especially is it necessary to suppose that increased atmospheric precipitation exerts a beneficial action by saturating the porous soil with moisture, and not by a direct action of the weather on the organism; for an influence extending itself over months has been established, and the high level of the water already collected in the soil, regarded of itself, is followed by a favorable and clearly perceptible action. (11) If we consider how often with a more than usual rain-fall there is also found, simultaneously, a level of ground-water above the average, it will be evident that in the majority of instances of such coincidence there is a connection between great rain-fall and high level of ground-water, and *vice versâ*. It is not surprising to meet with this connection, but it is noteworthy that the ratios in which level of ground-water and rain-fall respectively stand to prevalence of typhoid are expressed with greater precision than their indubitable mutual connection. The connection between ground-water and rain-fall—a connection which no one doubts—is never so clearly expressed in the statistics as the connection between the frequency of enteric fever and the state of the ground-water. Hence there is no longer any rational ground for doubting this latter connection. (12) Poverty, improper or unwholesome food, cold, uncleanliness in and about the house, defective waterclosets and sewers, damp, badly ventilated, overcrowded dwellings, marshes, &c., cannot explain the seasonal variations of enteric fever in Munich. These momenta act, for the most part, only upon the individual disposition in the way of producing typhoid; some also, perhaps, on the local disposition of the soil, since they impregnate this with organic matter. (13) Three great epidemics of enteric fever have broken out in Munich during the last fourteen years, during which period the state of the ground-water has been observed. The severest epidemic, in 1857-58, coincides with lowest level of ground-water; the next in severity, in 1865-66, with the next deepest; and the third in severity, in 1863-64, with the third level in depth of ground-water. (14) The same law comes out in the reverse case. Munich had the smallest typhoid mortality, since 1856, in the year 1867, at the time of the highest level of ground-water; the second smallest in 1860-61, at the time of the next highest level of the ground-water. (15) The influence of different potable waters upon the prevalence of enteric fever in Munich has failed to be in any way established.

Dr. Buchanan,* in a paper read before the Association of Medical Officers of Health, controverts Pettenkofer's views. He states that Pettenkofer's view is not a new one. Dr. Buchanan thinks that even on *à priori* grounds we may say that, until the contrary is shown, the presumption, as regards the coincidence of cholera and enteric fever with sinking ground-water, is that it is directly operative through drinking water supplied by wells; and he says that any one who will read Pettenkofer's account of cholera in Malta and Gibraltar, observing his careful mention of the height of water in the wells, will not fail to be struck by the absence of any mention of the quality of the water

* 'Med. Times and Gaz.,' 1870, i, p. 283.

regarded as a drink. He then adduces a striking instance* of a case perfectly illustrating Pettenkofer's theory—intercourse of infected persons, sinking of soil water, epidemic of enteric fever. But no unknown influence had here to be invoked, for he shows that, other conditions being the same, only the drinkers of one particular sort of water were affected with fever; and he then shows how this particular water got contaminated. He, moreover, affirms that the instances cited by Pettenkofer appear to have exclusively been those of places which derived their water-supply from the ground beneath them, and that the latter adduces no proof to show that this water was not peculiarly exposed to the contamination in the sinking of water in the soil. It appears, from the experience of seven large towns which Dr. Buchanan has visited, that when lowering of ground-water is brought about while drinking water is being supplied, not from the soil of the place, but from external sources, Pettenkofer's experiences, obtained from places which do derive their water-supply from their own soil, fail of application. Dr. Buchanan admits that subsidence of ground-water is a condition favorable to the epidemic prevalence of enteric fever, yet is of opinion that the qualification is wanted "where in the town or place the supply of drinking water is derived from the soil upon which the town stands;" and then the conditions to which Pettenkofer calls attention will range themselves under the more general etiological head of circumstances assisting in defiling supplies of drinking water. Pettenkofer replies,† and shows that Buchanan is mistaken in some of his inferences, and that those parts of Munich which are supplied with pure drinking water from an unquestionable external source have enjoyed no special immunity from enteric fever and cholera. His papers reiterate much that has before been said, but also contain much new matter bearing upon the controversy which will repay perusal.

Enteric Fever caused by Impure Milk.

Dr. Ballard‡ has published a very able and most instructive account of a localised outbreak of typhoid fever in Islington, in which he clearly and indubitably traces the cause of the outbreak to the use of milk contaminated with water from an underground tank supplied with water by the New River Company, but into which, by means of rat-burrows, sewer gases, and probably even liquid sewage, were admitted. This tank had not been opened or inspected for years. When opened, some inches at one side were found destroyed by rats. This allowed the water to flow over into a hole in the ground, evidently scooped out by rats, and leading to certain underground rat-burrows, by which, when the tank was filling, the water flowed into some old brick drains and watercloset drains close by. Through these underground channels there was free communication between the tank and the sewers; not only could water run away from the tank into the drains, but foul gases from the drains were sure to pass back into the tank. Shortly

* 'Twelfth Rep. of Med. Officer of Privy Council,' p. 72.

† 'Med. Times and Gaz.,' 1870, i, pp. 629, 661, 687.

‡ 'On a Localised Outbreak of Typhoid Fever in Islington, during the Months of July and August, 1870.' Pamphlet.

before the commencement of the outbreak an alteration was made in the drains, during which they were obstructed, so that there would be a reflux of the overflow water from these drains and rat-burrows back into the tank. It is a significant proof that this did happen, that at least two families shortly afterwards complained that the milk had a bad taste, and that the milk, when kept, became, not merely sour, but stinking. It is certain that the milk-cans were washed out with the water from this tank, and a shrewd suspicion may exist that some of it was mixed with the milk. The milkman, his family, and servants and customers, were very shortly afterwards affected with a fatal form of enteric fever, and the connection between the milk as cause and the fever as effect was shown by the fact that the fever was confined virtually to those who drank this milk. Dr. Ballard ascertained that 142 families, including the milkman's own, formed the "milk-walk" of this dairy. Of these 142, it is known that 70 families were invaded by enteric fever in the ten weeks during which the outbreak lasted. In these 70 families were 175 patients, of whom 30 died. It was remarkable to see how the fever picked out the families supplied from this one dairy, and avoided all the rest. Wherever the fever appeared it did not attack one, but several members of the household. In certain families, where particular members took no milk, they escaped, whilst others suffered. The women and children, who take most milk, suffered in the greatest proportion. A young lady, who had a tumbler of this milk daily, whilst the rest of the household were supplied from a different source, was the only victim in the house. The dairyman himself and his workmen were among the earliest victims. The business was given up and then the outbreak ceased. The disease was mainly confined to a circle within a quarter of a mile radius from the dairy, whilst the rest of the extensive parish of Islington was virtually free. Dr. Bell, of St. Andrew's, has recently shown that scarlet fever has been conveyed by milk to the customers of a cowkeeper, the cows having been milked by persons convalescent from the disease. Dr. Ballard claims to have shown that enteric fever may be similarly conveyed by milk.

Enteric Fever.

Dr. Alfred Carpenter,* of Croydon, publishes an extremely interesting paper, the first of a series, on the "Causation of Epidemic Disease," in which he deals with enteric fever. He shows, by several remarkable examples, how this disease has been caused by the vicious habit of constructing houses and public buildings on such principles as involve the conversion of the respective buildings (and especially the basements) into bell-jars, which enclose sewer gases, and likewise how unsuspected sources of impure water supply may give rise to epidemics of typhus fever.

Cholera and Fever.

Dr. Robert Lawson,† Inspector-General of Hospitals, has written

* 'St. Thos. Hosp. Rep.,' i, p. 427.

† 'Observations on the Influence of Epidemics of Fever in Checking the Advance of those of Cholera.' Pamphlet. 1870.

on the influence of epidemics of fever in checking the advance of those of cholera. The object of his pamphlet is, he says, to contribute to the attainment of a rational explanation of much that now seems unaccountable, by directing attention to a characteristic feature in the relations of fever to cholera. While investigating the course of pandemic waves, the author became aware of the influence epidemics of fever exercise in checking the advances of those of cholera, and *vice versâ*. Fever has frequently prevailed over an extensive area, and, though also embracing a large area, approached the other, yet, while the fever continued, epidemic cholera, as an epidemic, has never penetrated the fever field. Sporadic cases of cholera have frequently been met with a long way within the boundary of the fever field, and similar cases of fever within that of cholera, but still the fact remains that, though the fever and cholera fields approached each other, neither disease took the place of the other until its force as an epidemic was broken. This fact sanctions the inference that the conditions which generate fever epidemics are not only different from those which produce epidemics of cholera, but are also incompatible with them; and, further, that sometimes the one set of conditions, sometimes the other, exists over a large area of the earth's surface, and that the one will give way to the other without any marked change in the habits or circumstances of the population these areas embrace. The importance, therefore, of rightly estimating the influence exercised by one of these diseases over the diffusion of the other is obvious. Many illustrative examples are adduced to prove the correctness of this view.

Fungi and Disease.

The Rev. J. M. Berkeley* makes the following remarks on this subject. One of the most interesting parts of the reports on the diseases of cattle in the United States, and more especially on the lung plague and periodic fever, is that which contains the account of the investigations which were made with a view to ascertain, if possible, whether there is any reason to believe that parasitic growths in the blood or elsewhere have anything to do with the malady. Mr. H. W. Ravenel undertook to examine those of Texas, whilst Dr. Billings and Brevet-Major Curtis applied themselves more immediately to the examination of the fluids of diseased cattle with reference to the presence of cryptogamic growths. After all that has been said as to the fungous origin of cholera, and the confident assertion by Dr. Hallier that each form of fever has its own specific cryptogam, this became a necessary and, in its general bearing, a very important object of inquiry. The examinations, which were carefully conducted, do not give the very slightest reason for supposing that there is any truth in the supposition. It may be perfectly true that minute bodies known under the name of micrococci and bacteria may be present even in the fluids of apparently healthy individuals; but our authors say expressly, "In a general way it may be stated that all abnormal appearances observed in the fluids examined were such as might be attributed to putrefaction." The fungi which were generated in the fluids were the common forms which

* 'Gardener's Chronicle,' 1870, p. 416.

occur generally in decomposing fluids, and as regards the more minute bodies above mentioned their nature is not at present accurately known. It is true M. Ravenel informed us that Dr. Hallier raised from the blood and bile of diseased animals an organism which he calls *Coniothecium stilesianum*, of which he says, "Perhaps you may succeed in finding out the places where the coniothecium grows in nature. At all events it is a parasitic fungus growing on plants, and to be looked for in the food of the wild bullocks. We feel very thankful to Dr. Billings and his colleagues for their careful investigation, as it is highly important that attention should not be drawn off from more rational views by mere fanciful notions. The following observations are worthy of attention:—"It seems probable, in view of the results of the above experiments, that some of the bacteria and micrococcus germs are really fungoid in character, and capable of development into higher forms. If the above expressed view of the nature of these bodies be probable, the results of the culture experiments of the fluid of disease and healthy animals can readily be understood. In many animals, whether healthy or diseased, there are no fungus germs in the blood. We have kept vacuum tubes of blood for four months, and at the end of that time the contents were perfectly normal. In other animals there are probably germs in the blood during life, as shown by the fact that in vacuum tubes filled from them the blood putrefied, and the usual mycoderms developed. But that these germs can develope and multiply without dead organic material as a pabulum is very doubtful. As was stated at the beginning, our object was to determine the presence and, as far as possible, the nature of these germs. The query as to the connection between them and disease, whether they should be considered as specific causes of the disease, or as carriers of contagion, or as the signs of the destruction of vitality of a part of the fluid or tissues in which they are found, said destruction being due to some other cause, is one of great interest, for the answering of which, however, the lancet and the injection tube will probably be far more efficacious than the microscope and culture apparatus."

Air and Rain-water.

The Inspector* under the Alkali Act, 1863, in his 'Annual Report,' give some interesting and copious details showing the results of his analyses of air and of rain-water in various country and urban districts. These tabular details scarcely admit of useful abstraction. They are, however, well worthy of study by those interested in the question of atmospheric pollution by manufacturing industries.

Utilization of Sewage.

Prof. Corfield† publishes in a separate form a digest of facts relating to the treatment and utilization of sewage, prepared, as he says, for the Committee of the British Association. The book consists in main of a compilation from well-known blue books, &c., interspersed with some of the author's own opinions. It is, in fact, a digest of the 'Reports of

* 'Sixth Ann. Rep. for 1869.' Blue book.

† 'Digest of Facts,' &c. Macmillan, 1870.

the Medical Officer of the Privy Council,' and of the 'Rivers Pollution Commissioners' Report,' noticed elsewhere.

Earth-closets.

Dr. Rolleston* advances some weighty arguments in opposition to Mr. Moule and the introduction of earth-closets in lieu of waterclosets as part of our ordinary domestic sanitary arrangements. He quotes largely from Pettenkofer and from the reports of our Indian sanitarians and gaol surgeons, and shows that, in spite of the most thorough deodorization of excreta, the contagiousness of gaol fever continues unchanged, and also that where the earth used contains a large amount of moisture the fermentation of excrementitious matter will take place, and disease will be the certain and sure result.

Sewage.

In the 'Twelfth Annual Report of the Medical Officer of the Privy Council' are two voluminous reports upon this question, one by Dr. Buchanan,† the other by the same author and Mr. Netten Radcliffe,‡ Dr. Buchanan, who appears to be warmly in favour of the dry-earth system of dealing with excremental matter, concludes his report thus: —(1) The earth-closet, intelligently managed, furnishes a means of disposing of excrement without nuisance, and apparently without detriment to health. (2) In communities the earth-closet system requires to be managed by the authority of the place, and will pay at least the expenses of its management. (3) In the poorer class of houses, where supervision of any closet arrangements is indispensable, the adoption of the earth-closet system offers especial advantages. (4) The earth system of excrement removal does not supersede the necessity for an independent means of removing slops, rain-water, and soil-water. (5) The limits of application of the earth system in the future cannot be stated. In existing towns, favorably arranged for access to the closets, the system might be at once applied to populations of 10,000 persons. (6) As compared with the watercloset, the earth-closet has these advantages—it is cheaper in original cost, it requires less repair, it is not injured by frost, it is not damaged by improper substances being thrown down it, and it very greatly reduces the quantity of water required by each household. (7) As regards the application of excrement to the land, the advantages of the earth system are these—the whole agricultural value of the excrement is retained, the resulting manure is in a state in which it can be kept, carried about, and applied to crops with facility; there is no need for restricting its use to any particular area, nor for using it at times when, agriculturally, it is worthless; and it can be applied with advantage to a very great variety, if not to all crops and soils. After the disposal of excrement by earth irrigation will continue to have its value as a means of extracting from the refuse water of a place whatever agricultural value it may possess for the benefit of such crops and such places as can be advantageously

* 'Lancet,' 1869, i, pp. 319, 411.
† 'Twelfth An. Rep. of Med. Officer of Privy Council,' p. 80.
‡ Ibid., p. 111.

be subjected to the process. (8) These conclusions have no reference to the disposal of trade or manufacturing refuse, which, it is assumed, ought to be dealt with, as belonging to the business in which it is produced, by the people who produce it, and not to come within the province of local authorities to provide for.

In the second paper the general conclusions at which Dr. Buchanan and Mr. Radcliffe arrive are as follows:—(1) Excrement may be removed from a town and safely disposed of on more than one principle, and the same principle does not need to be applied in all quarters of the same town. (2) As regards the parts of a town inhabited by the poorer classes, a watercloset system may be managed so to be entirely applicable to the circumstances of the most ignorant and careless population. Essential conditions of such applicability, however, are, that the structural arrangements should be adapted to their purpose and be independent of the person using the closet, and that the management should be wholly undertaken and efficiently done by the servants of the sanitary authority. Where these conditions are observed as thoroughly as they are observed in parts of Liverpool, we believe that waterclosets are the best means of removing excremental matters from the poor neighbourhoods of a town. (3) The earth system affords a second way of safely disposing of excrement. It is, as shown in the special report on earth-closets, an essential element in this system also, as applied in poor neighbourhoods, that the entire management of it shall be conducted by the sanitary authority. (4) The midden system may be modified so as to greatly reduce nuisance and danger from it. We have described the form of midden-closet which we think presents fewest objections. We cannot speak of satisfactory safety in the use of this form of midden-closet, partly because we hardly expect to see it carried out with daily emptying, and partly because the materials of the midden would probably be retentive of some excremental matters; but if, under certain circumstances middens constructed as above should be tolerated, it would, we think, be scarcely less than essential—first, that they should, if in a densely populated neighbourhood, be emptied daily, or under other circumstances at least once a week; and, secondly, that the arrangements for excrement removal should be wholly in the hands of efficient persons appointed by the sanitary authority. (5) The pail system presents several advantages for poor town districts. It may safely be employed for excrement removal if movable pails of defined construction be used, and be changed every day for fresh pails. Such a system, involving similar construction or constructive alterations as are required for the toleration of a midden system, offers advantages over the latter in regard of facility for frequent removal of excrement, in regard of safety from nuisance, and probably in regard of profit in disposing of excrement as manure. (6) Those who use the closet may, both under the pail and the midden system, be expected, with due superintendence, to do the cleansing of it, so far as merely affects ordinary comfort and decency; but such action as concerns the effectiveness of the closet as a means of excrement removal must be taken by the sanitary authority itself. (7) If these conditions be accepted, it follows that there are various demonstrable methods which

will fairly answer the purpose of preventing nuisance and injury to health from the retention of excrement, at least until the perfection of arrangements for dealing with excrement shall be agreed upon. It cannot yet be affirmed of any one of the methods that it will develope into the only perfect system of the future.

Town Dwellings for the Poor.

Mr. John Liddle,* Medical Officer of Health for Whitechapel, in commenting upon the high rate of mortality (32 per 1000) prevalent in that district, makes some weighty observations upon the above subject. He says that such is the wretched condition of many of the tenements in some parts of London, that the mere whitewashing of walls and ceilings, improving the water-supply, providing better drainage, laying down good pavement in the fronts and backs of the houses, and diminishing the overcrowding of the rooms, are not sufficient to render a large class of the houses—now, as it were, jammed together and without proper ventilation—fit for habitation. The only thing that can be done to improve the sanitary and physical condition of the people who inhabit these dens is to pull them down, and so compel the inhabitants to move into more healthy localities. He then shows how the statutes for dealing with such houses have signally failed. The Nuisance Removal Act of 1855, imperfect as it is, is the only Act which is put in force to obtain an order from the magistrate to compel the owner to close a house which, in the judgment of the magistrate, upon proof being adduced, is unfit for habitation. But the order for compelling the owner to close a house is rarely applied for, mainly because of the almost insuperable difficulties in obtaining it and carrying it out. Mr. Liddle next discusses the several plans for improving the dwellings of the labouring classes that have been laid before the public—the formation of voluntary societies for the building of healthy and cheap dwellings; the erection of houses of a cheap yet healthy character, in the suburbs of London, accompanied by the facilities of workmen's trains; the expenditure of the public rates, as at Liverpool, in converting privies into waterclosets; the advance of an imperial loan to local authorities, to improve dwelling-houses, to sewer, drain, construct water-works, markets, &c.; the compulsory sale of land to public companies, under Government supervision, having for their object the improvement of the dwellings of the poor. The plan which Mr. Liddle himself recommends is that the Legislature should invest the Home Secretary or the Privy Council with power to appoint a certain number of skilled medical men as inspectors, who should be required to inspect the unhealthy localities in each district, and to determine what houses are unfit for habitation; and upon their report the Home Secretary or the Privy Council, as the case may be, shall take the necessary steps, either to cause the owners to put such houses in a state fit for habitation, or to cause them to be demolished. This scheme he would introduce gradually.

* 'Report on the Sanitary Condition of the Whitechapel District for the Quarter July to October, 1870.' Pamphlet.

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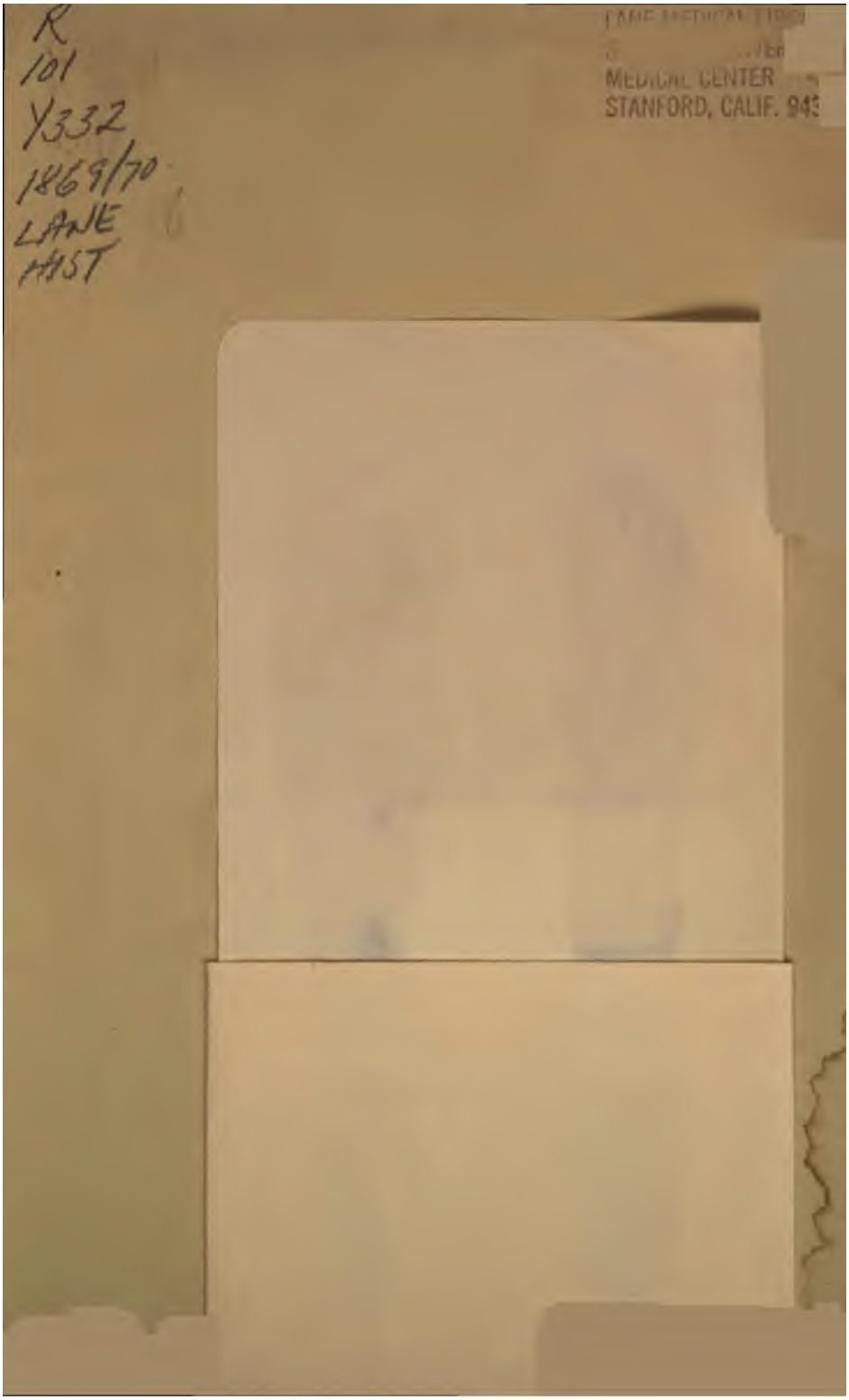
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